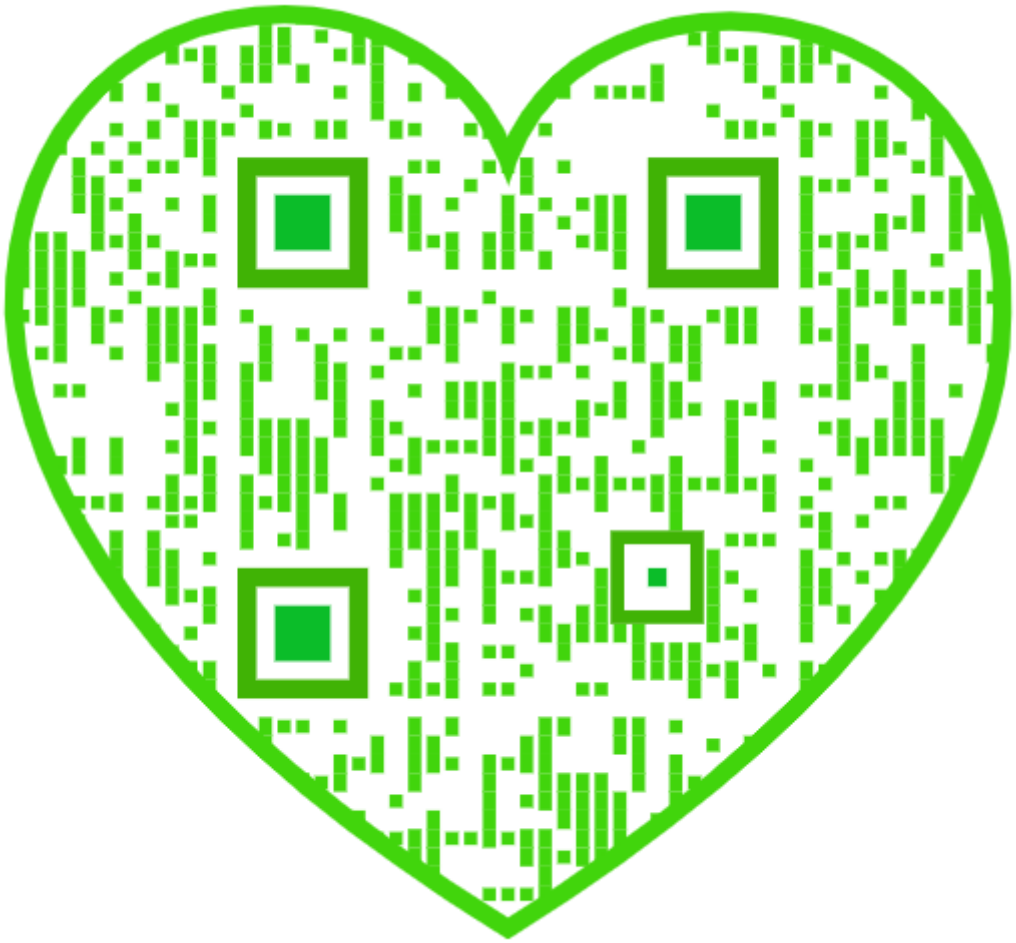

THE ARCHITECT AND ENGINEER OF CALIF.

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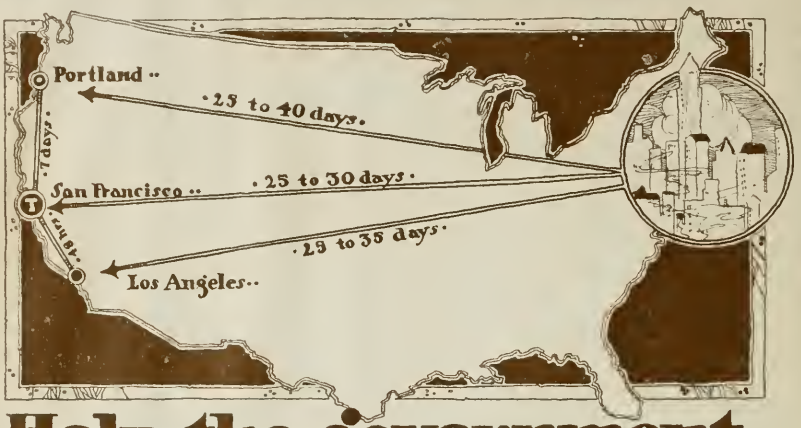
PUBLISHED MONTHLY IN SAN FRANCISCO
25 CENTS A COPY $1.50 A YEAR

JANUARY, 1918



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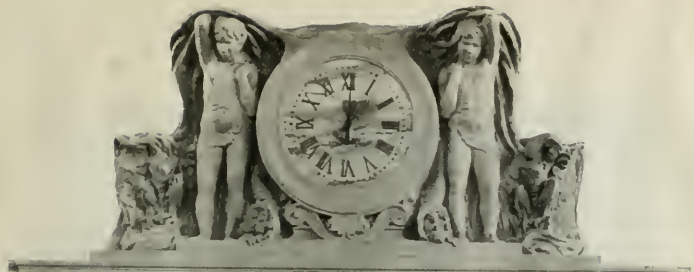

THE ARCHITECT & ENGINEER
OF CALIFORNIA

VOL. LII. No. 1

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Published Monthly at 626-627 Foxcroft Building, San Francisco in the interest of
ARCHITECTS, STRUCTURAL ENGINEERS, CONTRACTORS AND THE ALLIED TRADES OF THE PACIFIC COAST

Yearly Subscription $1.50
Single Copy, 25 cents

Entered at San Francisco Post Office as Second Class Matter

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Frontispiece
The Architect and Engineer
of California
for January, 1918.

A LIVABLE GARDEN POSSESSING THE TRUE COLONIAL ATMOSPHERE

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

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JANUARY, 1918 Vol. LII. Number 1.

The Colonial Garden for the Colonial House

By NEAL TOWNLEY CHILDS, Landscape Architect.

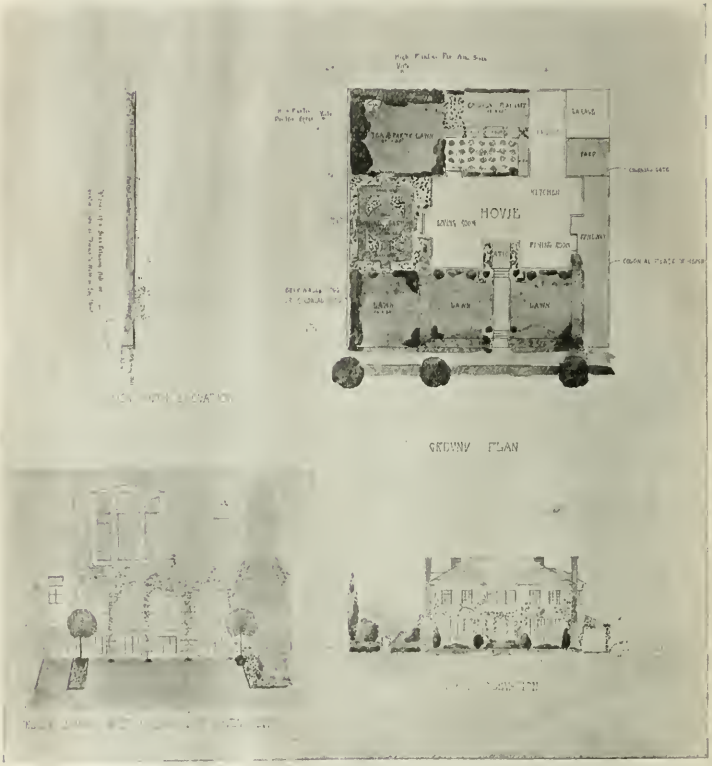
Matched Specimen Plants are Best as the Globe Box in the Modern Colonial Doorway.

EVERY type of architecture suggests—nay dictates a motif for the garden that frames it. For the Colonial house there is but one type of planting and its keynote is that simplicity and clean dignity that characterizes the Georgian style.

The present return to Colonial architecture is refreshing to the landscape architect as well as to the building architect. The landscape architect finds in this architectural Renaissance an opportunity of escaping from that pot-pourri of Japonic-Australasian plant material we have been accustomed to see so weirdly arranged about numberless bungalows and mud and metal pseudo villas.

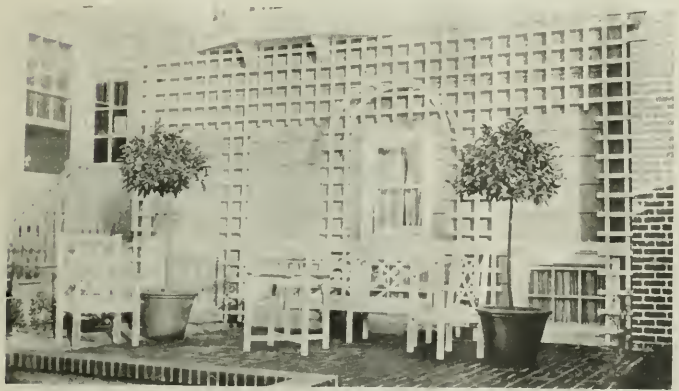
No doubt we shall yet see palms and draecenas, monkey puzzles and pepper trees about Colonial houses, but thank God, there will be exceptions.

The English colonist, whether Cavalier or Puritan, brought to America the Englishman's love of gardens. And about the houses of Salem and Marblehead, Charleston and Savannah, he built gardens essen-



PRELIMINARY STUDIES FOR COLONIAL GARDEN OF MR. CHARLES R. PAGE, ALAMEDA NEAL T. CHILDS CO., LANDSCAPE ARCHITECTS

HOUSE OF MR. CHAS. R. PAGE, ALAMEDA
A MODERN ADAPTATION OF THE COLONIAL, SHOWING BALANCED PLANTING
J. R. Miller, Architect *Neal T. Childs Co., Landscape Architects*



THE WALKS ARE BEST IN BRICK . . . . THE ARCHITECTURAL FEATURES MAY BE WORKED OUT IN WOOD PAINTED WHITE
Neal T. Childs Co., Landscape Architects

The smooth, broad-leaved evergreens—box, bay, holly—and the rest of the laurel tribe, have a peculiar affinity for orchitectural forms in classic design.

tially English in character, albeit reflecting slightly the formality of the French school of Le Nôtre.

In these gardens, he used trim box hedges, dark and stately yews, hollies and English laurels. The restricted cargo ships of the time forbade the importation of great numbers of the larger of these plants. Tiny box edging they were able to bring in quantity, and these they planted along the brick walks leading to stately colonial doorways.

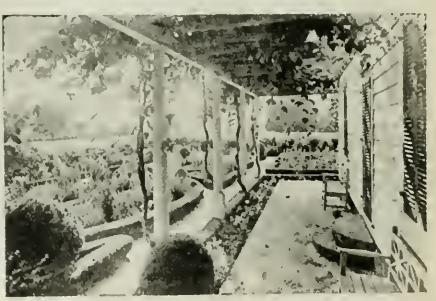
These early builders of colonial gardens found in the compact Arbor Vitae (Thuya occidentalis) and Red Cedar (Juniperus virginiana) of the Atlantic woodlands fitting substitutes for the yews of the English garden. They used them effectively to frame the trim lines and plain but pleasing surfaces of the Colonial house.

Today, as then, the compact, not too slender conifers are the best background plants for planting about the base of the Colonial house. For repeating the perpendicular lines of the classic columns nothing excels them, —not even Italian Cypress, which is too sombre and too slender.

Where the house is of ample proportions to permit the grouping of shrubs in well chosen masses, the slow-growing compact conifers, including the Thuyas, Junipers and Retinisporas, may be used to advantage. In smaller houses, with balanced fenestration, matched specimen plants are best. The transition between these matched specimens is happily accomplished by use of the clean sprays of barberry.

The smooth, broad-leaved evergreens—box, bay, holly, English laurel, rhododendron, and the rest of the laurel tribe, also have a peculiar affinity for architectural forms in classic design. The clean-cut glossy leaves of these plants stand out beautifully against a background of white clap-boards, shakes or brick with white trim. Soft pendulous foliage, such as ferns, should never be used close to the Colonial house.

The landscape architect in preparing both his design and planting plan for the planting immediately adjacent to the Colonial house should be careful to avoid crowding in too many plants. This for the reason that the lines of Colonial houses are best preserved and augmented by planting when a certain restrained individuality is maintained in the placing of each shrub and tree.



The Colonial flower gorden proper should give off directly from some intimate quorter of the house and serve as a transition between it and the landscape beyond.

For the border plantings about grounds surrounding a Colonial house, conifers of a more open habit are permissible. In the East, White Pine (Pinus strobus) and Hemlock (Tsuga canadensis) are excellent. In California, Coulter Pine and Monterey Cypress make fair substitutes. Among deciduous trees, the American Elm (in California, the English Elm), several of the Maples, Liquidambar and White Birch are very suitable.

The central axis of the garden should be centered on some prominent door or window of the house.

For the shrubberies at the foot of the border trees, there are the Spireas (Bridal Wreath), Deutzias, Lilacs, Syringa (Mock Orange), Viburnums and other old-fashioned shrubs. The shrubs that made glad the spring for winter-weary colonists are still the best facer plants for shrubberies in Colonial gardens.

The flower garden proper should be the "piece de resistance" of the Colonial garden. It should give off directly from some intimate quarter of the house and serve as a transition between it and the landscape beyond.

The historical atmosphere should be strong in a Colonial flower garden. No effort should be spared to give it that air of quaintness that we are wont to associate with the gardens of our grandmothers. The Colonial flower garden should be both grand and gay. It should reflect the primness of the Puritan and the color of the Cavalier.

The skeleton design should be laid on rectangular lines, with the central axis of the garden centered on some prominent door or window of the house. The walks are best of brick to blend with those used in the steps and chimneys of the house. Edgings for these walks are best of box or privet. Architectural features, such as seats, rose arches, arbors, etc., may be worked out in wood painted white.

The color scheme of the flower borders should give preference to pinks, blues, yellows and lavenders, with plenty of white, grays and greens as neutralizers.

The flowers should be largely perennials—lots of them—the good old-fashioned ones—phlox, pinks, paeonias, mignonette, hollyhocks and harebells. A few annuals should also be used,—stocks, snapdragons, clarkia, possibly some sun-flowers; and a few well-chosen roses complete the list. Among the roses there should be a profusion of climbers. Lady Gay, Dorothy Perkins and Hiawatha are good ones.

Some mint and thyme and some well-placed clumps of lavender will do much to create atmosphere fitting to this truly American type of flower garden.

The American Colonial house as an American product merits a setting that reflects the best traditions of its history and it is to be hoped that in its present revival, landscape architects will be careful to give its surroundings that character which so truly belongs to it and which is a part of its inherited right.

Revival of Colonial Architecture

MR. ALBERT FARR'S splendid article on Colonial Architecture in the November Architect and Engineer has stimulated new interest among Western designers in this charming style, and that the return to the Colonial is not a fad, as some would have it, is the belief of a writer in Southwest Contractor, who goes on to say:

"If a return to conservatism and good taste in building design can be called a fad, then we have no fault to find with those who refer to the Colonial style building as a fad. But a fad is a hobby in the generally accepted meaning of the word and fads are usually short lived.

"There have been fads in building design during the last half century as a survey of the buildings in any of the older cities of the United States will show. But these fads have all tended toward the freakish in both design and construction. Most of them have been the result of a foolish ambition on the part of the architects or designers to get away from 'old fashioned' architectural styles and produce something new and startling in its effect. Building monstrosities follow the wake of these misdirected efforts in every city. Los Angeles has a lot of these monstrosities in the old houses bedecked with meaningless scrolls and turned work that filled the coffers of the mill men.

"In those days of faddism in architecture the Colonial house was referred to as 'old fashioned,' but always with a certain feeling of reverence for the good old pioneer days of which they were regarded as monuments. Now those same old fashioned houses are being duplicated with astonishing exactness of detail, not because of any particular reverence for the good old pioneer days, but because the people are awakening to a realization that the 'old fashioned' architecture is good. Many of the early Colonial houses were designed by architects who applied with great skill the principles which are the basis for all good architecture today. They also adapted and modified with good taste the classic orders insofar as they were compatible with the uses for which the building was designed and the materials available for construction.

"We do not believe the revival of the Colonial styles of architecture is temporary; nor do we believe the present popularity of the renaissance styles of Europe, which has been coincident with the revival of the Colonial styles, is merely a passing whim. These styles always have been and always will be good and will always be appreciated. But there is a very grave menace growing out of the popularity of the Colonial and renaissance styles in the abortive attempts of unappreciative and unskilled designers to improve upon or 'modernize' them. We have noted several instances of this tendency in Los Angeles recently. Good architecture cannot be destroyed by 'burlesque' but the ideas of people who are not well informed on good architectural styles can be muddled by it and it is to be regretted that the public must again be forced to endure an infliction of architectural monstrosities upon the heels of the general uplift in architectural standards."

* * *

How the Japanese Draw Plans

The Japanese draw their plans on one sheet of paper and then they fold it all down so that it is flat, says, William A. Boring. When it is shown to the client, who has no imagination about mechanical drawing, the architect lifts up the side walls and puts the roof over the top. It is all drawn out and the client can look in the window and see the inside, or put it on the table and see what it looks like on the outside. It appeals to the imagination of people who are not educated to the building plan.

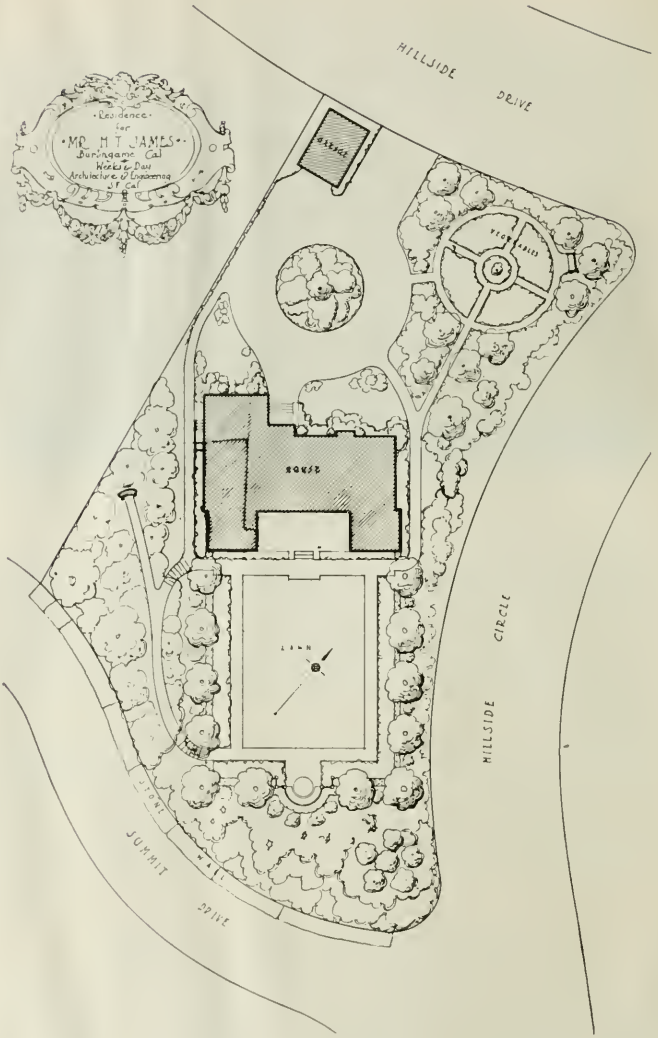
RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Wecks, Architect

Country Home of Mr. H. T. James at Burlingame Hills

THE accompanying illustrations are of the H. T. James residence at Burlingame Hills, California, and represent a charming type of the modern American country home. Due to the fact that the garden has been planted so short a time it lacks that fullness of planting and luxuriance of growth that time will bring.

The setting of this place is a triangular strip of land in the foothills of the peninsula overlooking San Francisco bay. The shape of the lot dictated the plan of the house. It is a composition of a symmetrical facade on the garden side and an asymmetrical facade on the entrance side, due to the garden's rectangular layout on the one hand and the diagonal approach on account of the irregularly shaped lot on the other. This double composition has added picturesqueness and homelike character. The house has also a broken skyline to add to this effect and to make it conform to the hilly character of the setting.

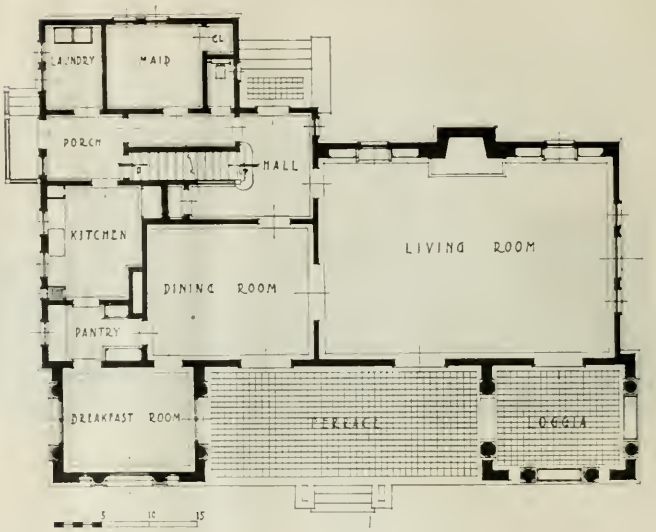
The color scheme, the only thing that is not shown by drawings and photographs, is that of a warm plaster wall crowned by a grey-green tile roof. The green cover tile vary in shade and hue; the trough tile are red, giving in shadow a warm grey tone. There is sufficient red in the terraces and steps to give a note of warmth to the building in its setting of foliage. The walls of the living room and dining room are rough plaster painted and stenciled. The fireplace in the living room is a rough grey buff brick. The wood work is stained to match this color. The sun room is in light greens, and the bedrooms in bright chintz papers.



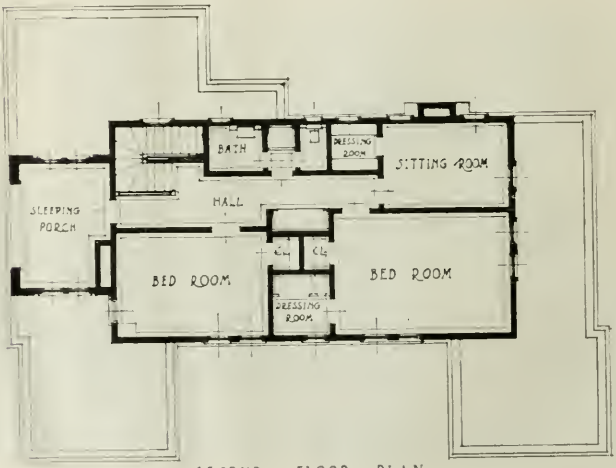
GARDEN AND PLOT PLAN, ESTATE OF MR. H. T. JAMES, BURLINGAME
CHAS. PETER WEEKS, ARCHITECT
WILL P. DAY, CIVIL ENGINEER

RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect

GARDEN VIEW, RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect



·FIRST FLOOR PLAN·



·SECOND FLOOR PLAN·

FLOOR PLANS, HOUSE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect

RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect

THE PORCH, RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect

VIEW FROM THE STREET, RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS

BREAKFAST ROOM, RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect

LIVING ROOM, RESIDENCE OF MR. H. T. JAMES, BURLINGAME HILLS
Chas. Peter Weeks, Architect

AN ITALIAN GARDEN TREATMENT AFTER DESIGNS BY SANGALLO

RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
ALFRED F. ROSENHEIM, ARCHITECT

BRICK HOUSE OF GOVERNOR CRADDOCK, MEDFORD, MASS.
Built in 1634 and still in good state of preservation

Brick—The Building Material of the Ages*

By ALFRED F. ROSENHEIM, F. A. I. A.†

QUOTING from Sir Charles Lyell's "Antiquity of Man."—"Granite disintegrates and crumbles into particles of mica, quartz and feldspar; marble soon moulders into dust of carbonate of lime, but hard, well-burnt clay endures forever in the ancient landmarks of mankind."

The complete story of Brick has never been told. Its history is the history of architecture. The purpose of this paper is to bring home briefly to you the fact that brick, the building material which has come down through the centuries, is still the leading building material in America. Other materials have, in various countries and at various periods, crept in for a time, but brick has always serenely gone on its way and after each digression has come back with more prestige than ever before.

It is a noteworthy fact that every nation that has not had stone easily available for its building construction has developed some kind of durable brick, specimens of which are extant today. It would be interesting to know whether or not the ancient nations, which so far as we are aware had no intercourse, each independently developed its building brick.

Brick was known in the very earliest Biblical times. It was by building the "Tower of Babel" of brick that the "Babylonians" hoped to span the space between earth and heaven. The Babylonians as early as 3000 B. C. built structures of brick—brick which is still sound. The modern town of "Hillar," with a population of 8,000, is today almost entirely built of brick taken from the buried palace of "Nebuchadnezzar." Every brick manufactured in the time of that bearded old tyrant, was stamped with his name. That, so far as we know, was the first use of a "trade mark." Many of the brick made in those days had enameled or glazed surfaces which have retained their color to the present time.

The children of "Israel" were required to make brick for "Pharaoh" during their bondage in Egypt; and it was the decree which required them

* Paper read before the Southern California Chapter, A. I. A., November 13, 1917.
† Mr. Rosenheim is the former president of Southern California Chapter, American Institute of Architects, and a past member of the Board of Directors of the Institute.

to furnish their own straw in the making of these brick that was directly responsible for the "Exodus." But with the Egyptians, as later with the Greeks, brick was a supplementary material. Their proximity to stone and the cheapness of their "slave" labor naturally made stone the dominant building material in these countries, particularly since they were ignorant of the fact that brick was the more durable material.

It remained for the Romans, the greatest engineers and builders of ancient times, however, to realize fully the possibilities of brick and to extend its uses to every kind of structure. They were the first to use burnt brick extensively. They were also the first to discover many principles of construction which are used even down to the present day. With the expansion of the "Roman Empire" brick penetrated every corner of the European continent and found its way across the channel to the British Isles.

Meantime, the Chinese developed brick to such perfection that it has stood in the "Great Wall" for centuries. This wall, which was ten years in building, was finished about 211 B. C., and such was the character of its construction that it is still sound.

The Saracens also developed a brick of their own and gave Europe lasting examples of their art in the "Alhambra" and other buildings they left behind them following their meteoric sweep across southwestern Europe.

In the "Middle Ages" brick was the most popular building material in Holland, the Netherlands, Italy and parts of Spain. Each country developed its own practice, leading to a great diversity in brick architecture. In England during this period, brick was largely covered with "compos," a practice abandoned in the beginning of the fifteenth century, when England began to perfect its brick architecture and give to the world buildings which set the standard until the present generation of American architects began to realize the possibilities of brick.

At the present time brick is the predominant building material in every civilized country. And the United States, whose building policy has never been worthy of its advance in the industrial field, is finally taking its place at the head of brick development.

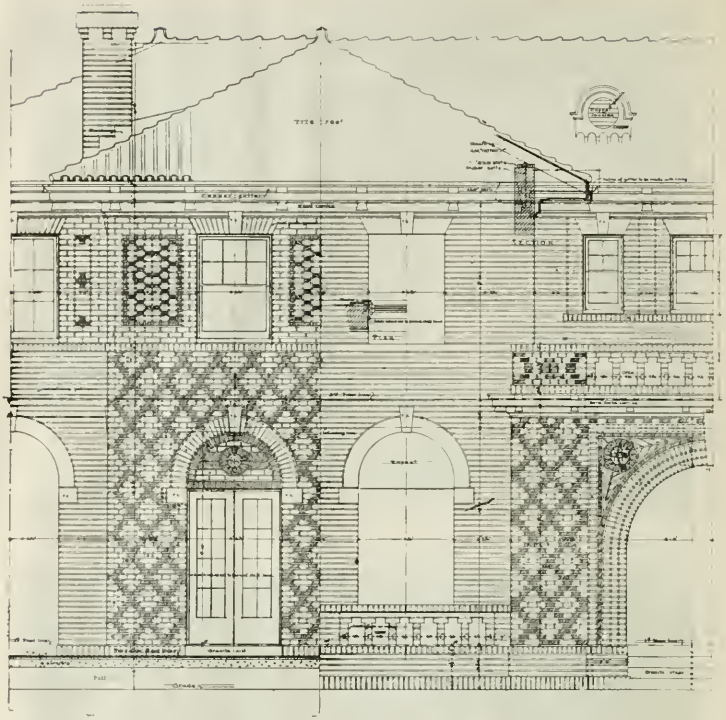
It is a strange fact that the United States, in which material progress has gone to lengths never before reached in the history of the world, should, until recently, have been the least progressive in the matter of building. In the early Colonial days economic conditions were such that it was only natural for the Pilgrims to construct practically all of their buildings of wood. But why we should persist in building of the most inflammable and least stable building material is one of the riddles of history.

The conditions which made wood the most economical building material have long since passed. When the forefathers landed there was a generous supply of timber on every hand. All that was necessary to make a house secure from the severe climate of New England was to cut down trees and build thick walls which could resist every kind of weather. There was an additional reason for this form of building, for there were no brickmakers among the earliest colonists. Not until 1634 was the first brick house built on the American continent. That was built in the town of Medford, Mass., by Governor Craddock of Massachusetts Bay Colony, of brick brought from Europe, and has stood as a monument to the durability of brick for almost three centuries.

So far as we know, the first brick in America was made in the New Haven Colony in 1650, but very little was manufactured until after the revolution.

ENTRANCE PORCH, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES

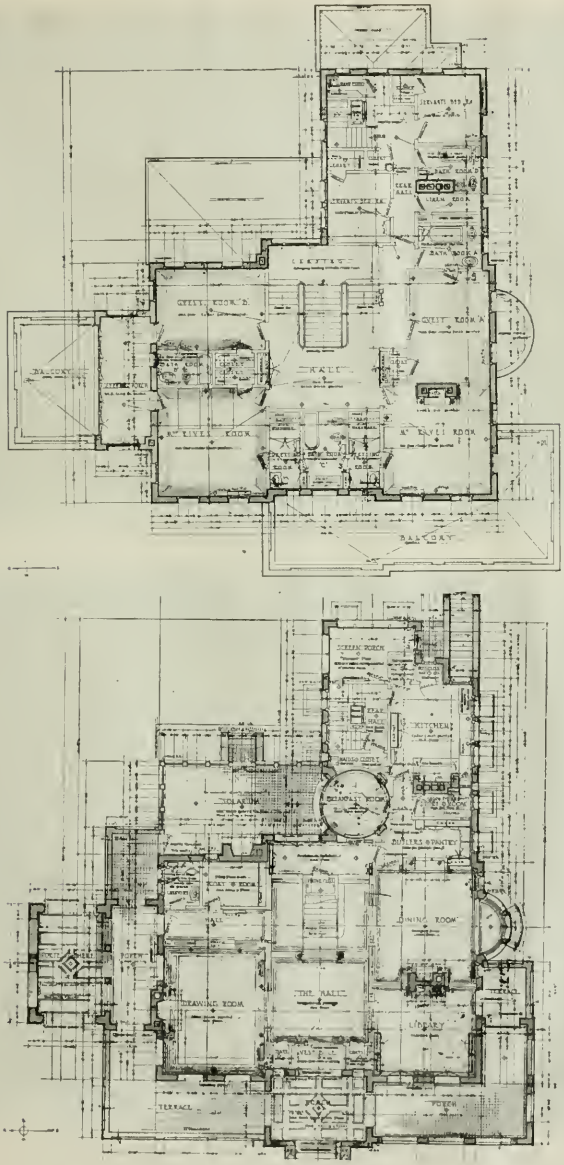
PORCH, LOOKING NORTH TOWARD ENTRANCE
RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect



DETAIL FRONT ELEVATION, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

But while brick was not extensively used, the most sacred monuments which we have of those early historical days were built of brick—the "Old State House" and "Faneuil Hall" in Boston, "Independence Hall" in Philadelphia, the old home of "William Penn" and the "Betsy Ross House" in which the first American flag was made. It has been possible to hand these down as an inspiration from generation to generation simply because they were built of brick.

Until comparatively recent times, wood in the ordinary building was the only material which was given any consideration. Only the pretentious houses of the rich and important commercial buildings were built of any other material, and in this class of buildings brick has always been the predominant material. Wood is, however, no longer cheap. Practically all the sources of timber within reach of the great centers of population have been exhausted. Lumber must now be hauled hundreds and, in many cases, thousands of miles, to market. Both the scarcity of the material and



FIRST AND SECOND FLOOR PLANS, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

THE HALL, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

BREAKFAST ROOM FROM SOLARIUM, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

DINING ROOM, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

SOLARIUM, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

GARAGE, RESIDENCE OF MR. JUDSON C. RIVES, LOS ANGELES
Alfred F. Rosenheim, Architect

the high cost of transportation have taken from frame construction the only virtue it ever possessed—cheapness.

Since this condition has come about, the inventive American mind has been working overtime trying to find some substitute for wood in economical building. In our own day builders have spent much time and money in trying to make "stucco and cement" construction a success, but so far they have not been rewarded with any achievement worthy of note. This form of construction was borrowed from European countries where the coat of stucco or cement has always been put on solid walls of brick or stone as a background, and where climatic conditions differ greatly from most parts of the United States. Some attention has also been given to concrete, and while this is adapted to some forms of building, it has not yet been applied successfully to small buildings. The best that can be said of all these makeshifts is that they are experiments, which have not yet proved themselves.

A very good illustration of this fact is a recent residence erected by a man whose energy is devoted to persuading people to build "stucco" houses. This man erected a fine house on one of the best known residence streets in a large Western city, and presumably it was in every way built in accordance with the most approved methods of this form of construction. Yet before he moved into the house, large rifts and cracks had marred its exterior. If one conversant with the best methods of building stucco houses meets with such failure, what hope is there for the owner who is inexperienced and who must depend entirely on others in the building of his house?

Through all these changes and fads in building construction the best houses have continued to be built of brick, for the simple and sufficient reason that for beauty and permanency no other material has ever approached it; and now, in our town time, in addition to these advantages, other materials have so nearly approached brick in cost that brick is also the most economical building material.

I have already suggested that no building material possesses the advantages of brick, and without going too deeply into the matter I wish to bring a few of the more important ones to your attention.

There are so many examples of the beauty of brick construction in almost every locality that merely to suggest this advantage, is sufficient. The best evidence that brick is the most durable of all building materials is the very history of brick itself. But there are other considerations as important as these.

After most exhaustive investigations, insurance experts, architects, chambers of commerce and the United States Geological Survey have come to the conclusion that no building material yet discovered even approaches brick in fire-resistive qualities. Nothing has more forcibly brought this fact to the attention of the American public than the "San Francisco" and "Baltimore" fires. The only walls that came through these disasters, that were fit to be used again, were built of brick. The reason for this is self-evident This advantage in brick construction is further emphasized by the fact that the difference in the cost of fire insurance on brick and frame houses is from 25 to 50 per cent in favor of brick.

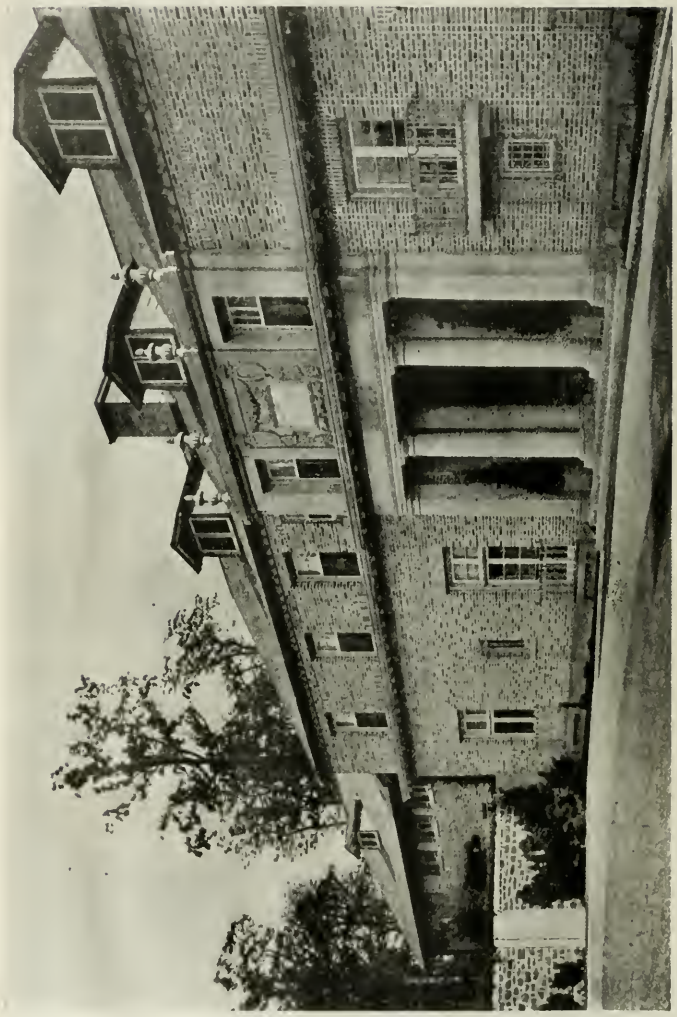
Another important consideration in every building is the cost of maintenance after the building is completed. No house so nearly maintains itself as a brick house. Every other form of construction requires constant attention. The one item of painting soon makes up for the difference in first cost between frame and brick construction. The annual cost of upkeep and repairs on an ordinary frame house costing $10,000 is $250, or an annual tax of 2½ per cent on the original cost of the building, according to statistics gathered by the Committee on Fire Prevention of the Boston Chamber of Commerce. The percentage practically holds, no matter what the size or the cost of the building.

Aside from this consideration of the increased cost of maintenance in other forms of construction, a brick house is the only house whose value does not depreciate form the very day it is built. There are many instances in every community where brick houses, after years of service, have been sold for more than their original cost. This fact alone makes a brick house a much more stable form of investment than a frame house, for the selling value of the house is the only tangible index of its value.

Another saving which comes with a brick house is in the matter of heating. A brick house not only requires a smaller heating plant than a frame house of the same size, but also saves from 20 to 25 per cent of fuel. Furthermore, all the inconvenience and cost of frozen plumbing are eliminated in a brick house. Without entering into details, everyone knows that there is no cooler house in summer than a well-constructed brick house.

These advantages have long been conceded to brick, but through force of habit persons look upon brick as an expensive form of construction. People who must necessarily economize in building have come to regard brick as beyond their means. Yet it is a fact that the more one is forced to economize, the less one can afford not to build of brick.

I do not maintain that brick construction is cheaper in first cost than frame or stucco. What I do claim for it is, (and I have ample ground upon which to base this claim) that brick is the most economical form of construc-

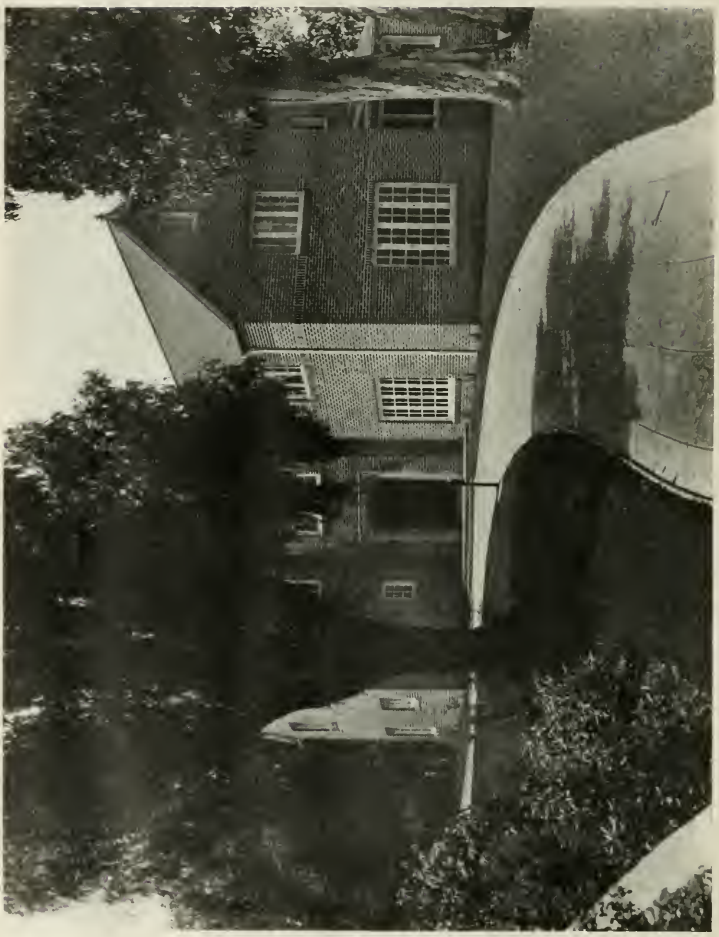


ENTRANCE FRONT, RESIDENCE OF MR. JAMES M. WILLCOX
HOWARD SHAW, ARCHITECT

ENTRANCE, RESIDENCE OF MR. GEORGE PICK, HIGHLAND PARK
HOWARD SHAW, ARCHITECT

ENTRANCE, RESIDENCE OF MR. W. B. BOURN
SAN FRANCISCO, CALIFORNIA
WILLIS POLK & CO., ARCHITECTS

ENTRANCE, HOUSE OF MR. SIDNEY M. EHRMAN, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT



RESIDENCE OF MR. GARFIELD R. JONES, PASADENA
WALTER WEBBER, ARCHITECT

ST. PAUL'S EPISCOPAL CHURCH, OAKLAND, CALIFORNIA
A good example of pressed brick work for interior finish
BENJ. G. McDOUGALL, ARCHITECT

CITY AND COUNTY HOSPITAL, SAN FRANCISCO
Constructed entirely of red pressed brick

I. O. O. F. BUILDING, OAKLAND
J. Henry Boehrer, Architect

ARTESIA GRAMMAR SCHOOL BUILDING, LOS ANGELES
Withey & Davis, Architects (by H. F. Withey) *Example of Red Ruffled Brick.*

tion. The difference in first cost is so slight that it is only a matter of a few years before the saving in the expense of maintenance, in fuel, fire insurance, etc., more than makes up this difference.

This matter of the comparative cost between brick and frame has been given a great deal of consideration in the last few years by committees on fire prevention, which have been appointed by civic bodies in many cities. While the primary object of these investigations has been to find some remedy for the great annual loss by fire in American cities, almost all of these committees have taken up the "relative cost" and maintenance of various forms of construction to show that brick buildings, which are most fire-resistive, are also the most economical.

The relative cost of building materials very naturally varies greatly in different localities, due to proximity to one or another form of construction material. It has been possible, however, from all these reports to arrive at an average cost, from which the cost in different sections will not vary greatly.

The greatest difference is between all frame with clapboard exterior and a 13-inch solid brick wall with exterior facing of a high grade front brick. This difference, however, is only 10.7 per cent. The difference between a clapboard house and a brick veneer on frame studding is 3.3 per cent. It is also interesting to note the difference between brick and stucco. There the solid 13-inch brick wall is only 5.8 per cent higher than "stucco on hollow tile."

It is always well to bear in mind, in considering the relative cost of brick and other forms of construction, that the difference in cost is entirely the difference in cost of the outer walls of the building. The interior construction of the building, which is after all the largest item in the cost, is practically the same in all kinds of buildings.

A ROMAN CHURCH SHOWING ITALIAN METHOD OF TREATMENT OF PUBLIC SQUARE

The Vital Message of Architecture

TO consciously appreciate the influence exerted by architecture, it is necessary first to distinguish it, instinctively, from building. Every piece of architecture is a building, but every building (unfortunately) is not a piece of architecture. To appreciate architecture in terms of everyday enjoyment, or even inspiration, implies no technical knowledge and should need but little guidance, says the Christian Science Monitor.

To be very unarchitectural, let us turn back to Plato for a moment, to one of his lucid statements which may make a good starting point. Said he: "Things fall into two classes. Some things have sensible likenesses easy to apprehend. These you can point out, and so teach them readily without trouble and the use of language. But the greatest and most precious things have no outward image of themselves visible to man, to which the teacher can lightly point and so satisfy the soul of the inquirer. Therefore, we must train and discipline our minds to render and receive an account of them in words. For it can be done in no other way."

The first of the two classes into which Plato believed all things fall—the class of things which possess a "sensible likeness" in architecture, are the forms which successive ages and different nations have evolved.

The proportions of a classic column, the detail of a bracket, or the divisions of a cornice—these are the technicalities, the mere material media of architectural expression, which are so often mistaken for "architecture." But "literature" is not to be found by conning the words in a dictionary, simply because a literary work is composed of words, any more than "art" is to be found in the pigments which are spread out on the painter's palette.

The forms, to be sure, are used by the architect to create a master-building, exactly as words are used by a writer and pigments by a painter, and the merit of the achievement of any one of these is measured by his technical mastery of the media in which he is working. But the achievement cannot but lack its fullest meaning, the meaning which every work of art must have, if the architect, the writer, or the painter, be not endowed with fine vision, with some sense of the element of nobility which he must infuse in his work.

Naturally, man was first a builder, then an architect. Shelter from the elements and from beasts of prey engaged his first thought. Soon, however, he came to worship something—to rise out of his strange human consciousness, to look to something higher and greater than himself or his material needs, and to this "something" he erected temples where he strove to express, in human terms, something of the sublime. This building, then, became more than building, it became a tangible expression of aspiration—in other words, it became architecture.

Such were the monuments of the ancient Aztecs in South America; in Egypt such wonderful efforts were achieved as the great temple of Karnak, architecturally majestic and fine after all the centuries which its colossal columns have seen. Religious beliefs changed in form and name, but the idea of architectural aspiration remained the same, and, in Greece, left to posterity the immortal dignity and nobility of the Parthenon. Then Rome, more worldly, more secular in its interests than Greece, expressed its majesty and self-importance in architectural terms—left the Colosseum, great viaducts, triumphal arches and the Forum as memorials of its greatness.

Out of the Dark Ages, architecture rose once more, at the beginning of the Thirteenth Century, in a guise which would have been unrecognizable by the Greek temple builders. Different in form, entirely different, architecture still played its great role as a medium for man's expression of spiritual aspiration.

This was the period of the great Gothic cathedrals, where every line, every mass and every detail mounted ever upward in one great expression of altitude. It is because of this unity of intention that the Parthenon, for example, and the Cathedral of Rheims, are both master-works of architecture, though utterly different one from the other in their outward appearance.

Again, a great change, and the pendulum of architectural taste swung back once more to the classic idea. The builders of the Renaissance found further splendid possibilities for expressing their most exalted ideals in the remains of Greek and Roman architecture. And so works of such architectural majesty as the great colonnade of the Vatican were designed, the dome of St. Peter's, and so, in England, the vast fabric of St. Paul's Cathedral rose to heaven.

In those early times man was discovering the expressive possibilities of architecture, in several of its superficial forms, as a means of expressing great abstract ideals. In subsequent years, and in our own time, the course of architecture has followed in the same channels, for the simple reason that the possibilities of the great discoveries of the Greeks, the Romans, the builders of the Middle Ages, and of Renaissance Italy, have by no means been exhausted.

If we look about us we will discover the imprint of one of the fine old precedents upon every building of today that attains any conspicuous degree of impressiveness. Every great colonnade echoes the architectural nobility of Greece or the majesty of Rome. The Woolworth building and certain other great towers in Gothic vein point out to us the permanency of the underlying meaning in the works of those aspiring builders of the Middle Ages. Such a facade as that splendid colonnade of the Pennsylvania Railroad station in New York must be convincing proof that the builders of Renaissance Italy built in terms which have outlived the intervening centuries.

But this may seem but a historic retrospect. What, for the receptive mentality today, is the message of architecture? Its meaning? The influence which it must exert upon us?

The message—its meaning, its influence—these are potent and full of deeplying significance. Architecture, as read in the greatest buildings of the past, tells us of the history of man's aspiration; it is a human document; it is a record of fine achievement, of constant and sincere striving, through the exercise of head and hand, toward a great ideal; it is proof tangible of the continuity of human effort, rising, as it did, from the oblivion of the Dark Ages, surviving whatever personal vanity or vain-gloriousness of such individuals as sought to intrude egotistical personality. Through the medium of architecture, the thought of man and the hand of man conceived and fashioned a thing greater than himself, and a thing which long outlived the span of his own lifetime, because he sought ever to express, by column, or arch, or pinnacle, an ideal of sublimity, of majesty, of nobility.

To see these things in building is to see architecture; to see what it has meant to those who created it; to realize what it can mean to those of us whose priceless heritage it is.

* * *

Outside Elevator for Los Angeles Building

Owing to the architectural design of the courthouse in Los Angeles and its location on a hill, the elevator is placed outside of the walls. One of the streets on which the building fronts is two stories lower than the courthouse, and the elevator shaft runs down to the level of the street, access from which is gained by means of tunnel underneath the courthouse lawn. The shaft is of steel construction with a circular front and ornamental iron work at each floor. The design would hardly be practical in any except a mild climate, and the elevator is said to be the only one of its kind in operation.

Public Appreciation of Good Architecture

STANDARDS of Ethics, standards of practice, and standards of esthetic expression are never realized or fully understood except through actual experiences and applications," said the Committee on Public Information in its report to the last annual convention of the American Institute of Architects.

"We want the public to recognize our standards of ethics and professional practice; we hope to awaken an interest in a better architectural environment; we long for an integration of taste. Can we not find some better way of focusing attention upon, and of making more vivid our ideals than fumbling about with statements and advertisements concerning the schedule of charges and kindred matter? There is, as a matter of fact, nothing vivid in such statements; and they appeal only to the relatively few who are, for the moment, engaged in building operations.

"There is a topic which is pertinent and of interest to many people: it concerns art, architecture, and taste as well as our political structure. This topic might well serve as the vivid axis which would intersect our ideals and the complex conditions of the present day.

"Let us put away, as a matter for emphasis with the public, for the time being the subject of ethics, the schedule of charges and advertising, and concentrate upon that function of government which by its very nature is our problem to solve, because we are both architects and citizens. It is doubtful if any city or any state possesses a building policy worthy of the name. We know that our National Government has none at all. Here is our theme—Why not set about the formulation of such a policy which would be applicable to city, state and nation? This is a large program, and its formulation and adjustment to our present political and social structure would require time and a profound study of the forces in our democracy. The magnitude of the task should not deter us; we should rather consider that the time is opportune, for already important changes are being wrought in the machinery and function of government, particularly in connection with the formation of the budget and the establishment of definite policies of conservation, development, and growth. Some group with a knowledge of the problem and with imagination must blaze the trail; someone must formulate the legislative changes and provide the proper machinery which will end our aimless, blundering, and ofttimes dishonest method of providing physical properties belonging to the Government.

It would be absurd to even hope that we could bring about an immediate change; but if we could focus attention upon this problem by a presentation of material related to conditions here and abroad, and at the same time present sound suggestions for solving the problem, we would make a very material contribution to this phase of government and to architecture of this century. There is not the slightest doubt but that the vigorous pushing of such a general plan in every state would, in time, produce tangible results, while, at the same time, the ideas of the Institute would be made manifest in a very positive way.

"In the annual report of 1915 this Committee stated that a general appreciation of the meaning of architecture involved a fundamental change in our entire educational system. A further study of the question has not only reinforced this belief, but has also led to the formulation of certain definite ideas concerning details.

"In the mid-year report the Committee on Education, after outlining conditions in the colleges related to esthetic instruction and offering a number of suggestions concerning the content and character of courses which should be offered, says:

"'Your Committee believes that the standing of architecture in this country depends quite as much on the general education of those who might be classed as the most cultivated portion of the community as it does upon the class of education that is given in architectural schools. Until the average educated man employing an architect has a more definite idea of what art is, it will always be difficult to establish architecture as a profession in which the qualities of an artist are the important factors.'

"With this statement your Committee agrees in part It sees, however, a danger in such a program, as further outlined in that report, for there is a fundamental difference and distinction between a culture which rests upon a set of imposed standards of taste and that which is the outgrowth and development of a people's conscious effort to express its own peculiar social and economic ideals in form and color. The mere acceptance of a form as representing an esthetic standard is more apt to result in stagnation than progress. The teaching of cultural courses in our colleges and universities would have a value if that teaching involved processes of reasoning and the relating of forms to the actuating forces producing them. Concerning this phase of the educational problem, the suggestion is made that, as a substitute for an arrangement of courses which would catalogue and label the art forms of the past, the more advanced work be so organized that the emphasis in study be focused upon a group of our own social and economic ideals, and the true meaning of architecture and esthetics be taught by suggesting to the student the nature of the appropriate form expression for these ideals. By the introduction of the 'present,' by relating a vivid social ideal to the same expressed in form, we would do much toward awakening an appreciation of architecture, both past and present.

"But does this satisfy? Is our process complete? In our suggestions for the architectural schools and for our college courses we have merely provided the formula of the developer; we have still to prepare the sensitized plate to receive the impression. This involves the public schools, for it is here that our work must start. To suggest even the broad general outlines of such a program would require a volume by itself.

"It is not suggested that esthetics, or architecture, or art as such, be introduced or added to our now greatly overburdened curriculum of the secondary schools. We should, however, formulate in specific terms such a program as could be made to amalgamate itself with the admirable concept of education as a normal growth advocated by Doctor Dewey, and which now may be found in operation in the schools conducted upon what is known as the Wirt plan; what would be of value—what is needed—is a definite suggestion which would, even in the lowest grade, open the mind of the child to the significance of form, not through his being told, but through his own expeditions of discovery.

"In every sphere of esthetic interest we have attempted to provide education, but almost universally that attempt has been with the very few comprising the thin top layer of our social mass; it has been remote and unrelated to anything in our lives, with the result that we are surrounded by chaos and little else. Here is the problem. It is worthy of our most serious effort, and we will hope in vain for an integrated environment so long as education in esthetics follows the paths which lead only into the past."

Mr. Bernard Maybeck Plans Greater Mills College

PLANS for a greater Mills College by Mr. Bernard A. Maybeck, architect of the Fine Arts Building, Panama-Pacific Exposition, have been adopted by the board of trustees of Mills College, Oakland. Funds which made possible the designs were the gift to the colloge of Mrs. Phoebe A. Hearst.

In the new plan the vision of the man who conceived the Fine Arts Building of the Panama-Pacific Exposition has transformed the campus and made provision for generations to come, with the end in view of expressing the character of the college and influencing the community by the style of the architecture and arrangement of the grounds.

The plan includes two main vistas with the main entrance facing Hopkins street instead of Seminary Avenue, as at present. It suggests a new avenue, skirting along the hills, beginning at a bridge crossing Dimond canyon at the terminal of Trestle Glen, passing along Redwood Avenue, and meeting Mills campus at Lake Aliso, then running parallel to the car line and entering the grounds at the forecort, where the semi-public departments of the new plan will be found. The main entrance will be approached by a tunnel under the Hopkins street car line.

The general plan for the building on the grounds provides for the departments of music and art to each side of the main entrance. The main vista extending north and south will end in the church edifice. At 45 degrees to this axis will be the athletic field, which in size will compare with that of the University of California.

The architect has provided for a mausoleum as the tomb of Mr. and Mrs. Mills, founders of Mills College, the architectural theme of the mausoleum to be that of poetry. The part of the campus around Lake Aliso is to be left as it now stands and in the belief of the architect this grove will become as famous as the Nikko Temple of Japan.

The class rooms are to be arranged in groups of cottages, each group to be amongst the trees and not appear in the general view of the campus. The Phoebe A. Hearst plan provides for unique housing accommodations for the students.

Small houses will form homes for groups of eight or ten girls, the girls themselves to do the work necessary to maintain the home. These homes are to be removed from the general view of the campus in accordance with the arrangement for the class rooms. The approach to the main entrance from Hopkins Street will be lined with small artistic stores for a distance of a sixth of a mile.

In presenting the plan before the students, Mr. Maybeck said:

"The spiritual cause of Mills should appear in the style of architecture and the grounds. The making of a plan for Mills must have a moral power. On this as a foundation the whole fabric must rest. The effect of a forceful, beautiful plan for Mills will act and react on the college and on the community of Oakland. An unseen power in St. Peters had its effect on Rome and on Europe.

"Those who have seen St. Peters must have realized what an effect it must have had on the history of Europe. To plan for Mills is symbolizing the will to force something on the eternal fabric into some form that will be a subtle guide, leading the unsuspecting girls of Mills to hunger for ideals, like fine music stimulating to great deeds."

* * *

Another Improvement

"Is there any interior decorating going on in your town just now?" asked the visitor to Grizzly Gulch.

"Well," replied the local paperhanger, "up at the hotel yesterday we hung a boarder."

THROUGH THE ATASCADERO COLONY, COAST ROUTE, CALIFORNIA STATE HIGHWAY

THE NEW CUESTA GRADE, COAST ROUTE, CALIFORNIA STATE HIGHWAY

State Highway Construction in California Under Commission Supervision*

By WALTER C. HOWE, M. Am. Soc. C. E.

THE era of good roads in California dates back but one decade, the pioneers being Los Angeles, San Diego, Sacramento and San Joaquin counties, in 1907 and 1908.

Following the voting of a bond issue for some eighteen million dollars by the people of California, the California Highway Commission, under the leadership of its chief engineer, Austin B. Fletcher, M. Am. Soc. C. E., commenced in 1912 preliminary reconnaissance and location surveys for the projected system of highways to include two main lines from the Oregon line to San Diego, one along the coast, and the other through the interior valley.

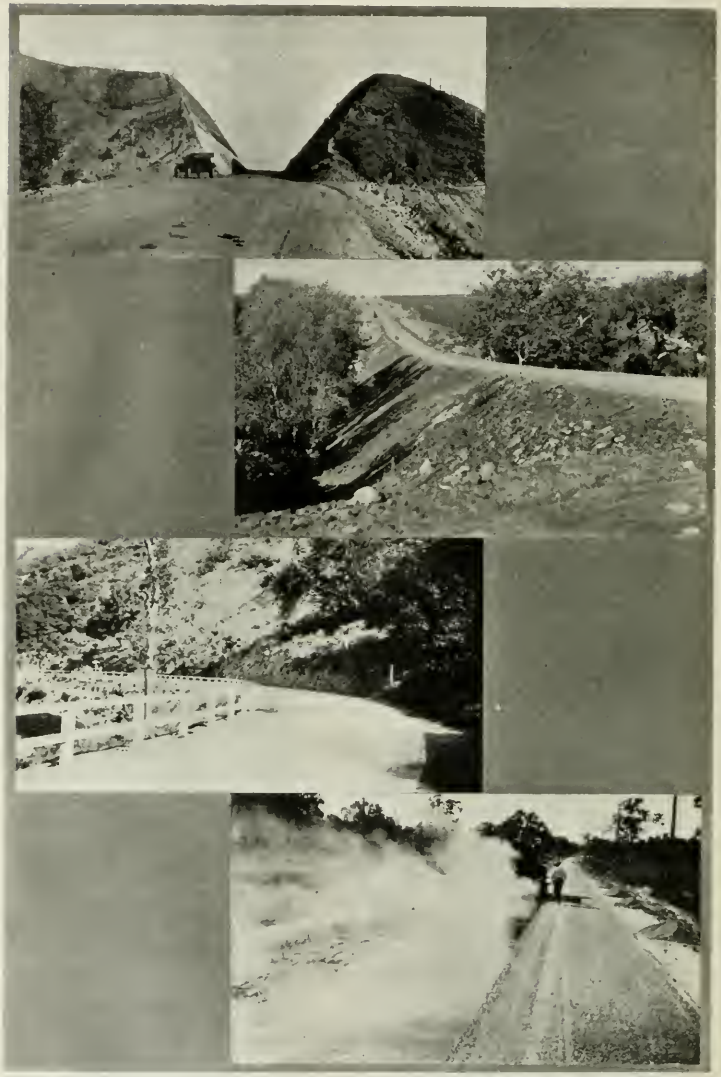
The commission adopted a set of standards comprising regulation oil-macadam, 5-in. water-bound macadam with 1-in. to 1½-in. asphalt or Topeka surface, 5-in. concrete base with 1-in. to 1½-in. asphalt or Topeka surface, and 4-in. concrete base with thin asphalt or oil surface.

Owing to the vast amount of work to be done under the limited expenditure, it was thought that the major part of the paving would be oil-macadam, and two contracts, aggregating about twenty miles, had been let and successfully constructed, but the chances for failure appeared too many, and when, after much parleying, the cement manufacturers, in order to stimulate the use of Portland cement in highway construction, established a mill price at a reduced figure which they agreed to protect during the life of the State highway work, it was determined to construct most of the State highways with a concrete base, topped with bituminous material, thick or thin, as the character of the traffic seemed to dictate.

The generally accepted practice for asphalt pavement construction on the Pacific Coast in 1911 and 1912 was a 1 to 9 concrete base 6-in. in depth, an intermediate or binder course of asphaltic concrete 1½-in. in depth and a wearing surface of sheet asphalt 2-in. in thickness, making a total of completed pavement after compression, of 9½-in. This, of course, applied only to city streets, as little or no work of this high character had been done on country roads. In Wayne county, Michigan, there had been successfully built and maintained concrete roads consisting of a rich mixture (1-1½-3) from 7-in. to 9-in. in depth, with surface especially designed to resist the abrasive action of traffic without asphalt surfacing. After careful investigation and experiment, the commission determined to adopt for the bulk of its work, in lieu of oil-macadam, a 4-in. slab of 1-2½-5 concrete with a thin bituminous topping. It was also decided in all cases to omit the customary binder course and substitute therefor a paint coat consisting approximately of one part (by volume) of asphaltic cement, heated to a temperature of between 250 and 300 degrees F., to two parts (by volume) of engine distillate, the whole being poured over the concrete base and worked out with hand brooms.

When it was proposed to build the first stretch of highway out of San Francisco with a 5-in. concrete base, omitting the regular 2-in. binder course and reducing the wearing surface to 1-in. in thickness, the procedure was generally condemned by paving contractors and its failure predicted by many engineers of experience in pavement construction. It was claimed on highway work, where water and transportation facilities are not

* Abstract of a paper and discussion before the San Francisco Association of members of the American Society of Civil Engineers.



VIEWS SHOWING CUTS AND FILLS IN THE COAST ROUTE, SANTA BARBARA COUNTY, CALIFORNIA STATE HIGHWAY

convenient, that a concrete base of only 4-in. in thickness, or any other thickness, are an impracticable structure extremely difficult to construct and prohibitive in cost to protect from the sun and keep damp while curing.

The success of the adopted type of construction in California is evidenced by the fact that it is being adopted throughout the State by many counties, and is being laid on many city streets. So excellent has been the bond obtained by means of the paint coat on the sheet asphalt and Topeka road sections that it has been found in most cases that the wearing surface could not be separated from the concrete base without rupturing the concrete itself.

Pavement failures are due to many causes and occur even under the most approved specifications and the most expensive work, but it is very doubtful whether the percentage of failure in the case of the thousand-odd miles of 4-in. concrete base laid by the commission to date is any greater, if indeed as great, as of failures in pavements laid by municipal authorities under the most expensive and modern specifications in many of the cities on the Pacific Coast. The principal causes of failure noted in connection with highway work in California may be enumerated as follows:

1—The use of unscreened gravel in some of the early contracts.

2—Improper curing of concrete base (since corrected by adopting the check method).

3—Opening of concrete pavement to traffic too soon.

4—Improper subgrade insufficiently compacted.

5—Shallow subgrade causing installation of pavement less than 4-in. thick.

Most of these conditions were corrected in the early stages of the work; others are strictly in the hands of the resident engineer, and here, as usual, the personal equation counts.

Probably the greatest critics of public works are the people, who magnify minor defects of construction and the failure of a fifty-foot strip of highway in a ten-mile section would be emphasized out of all proportion to its importance. Occasional longitudinal cracks due to swelling adobe sub-base, or radiating cracks at frequent intervals due to the same cause, spell failure of the road to the ordinary layman, when, as a matter of fact, these self-same cracks filled with hot asphaltic cement and screenings become natural expansion joints, and aside from the unsightly appearance, are unimportant. The application of a thin bituminous wearing surface soon overcomes the unsightly appearance, and the critical individual riding over the road at a later period would probably consider the same stretch that he had previously condemned, a most attractive and successful piece of highway work. The general approval of the standards adopted and highways built under the commission in California has, however, been satisfactorily and conclusively evidenced by the popularity of the second bond issue of fifteen million dollars overwhelmingly voted last year by the people of each and every county of the State.

The question has often been asked, What causes have made for the success or failure of contractors on State Highway work? At the opening of the work contractors of all types and classes rushed into the field, many lacking both experience and financial backing, and a large percentage of these failed disastrously. Such failures of course require no comment. Another fruitful cause of failure has been poor or careless judgment on the part of the contractor in preparing his cost estimate. On a certain moun-

VIEWS SHOWING PAVING OPERATIONS

(1) Sub-grade ready for rolling (2) Reducing the grade with wooden drag operated on headers (3) Compacting sub-grade with 15-ton roller (4) Mixing and placing concrete (5) Method used in curing concrete base (6) Completed concrete road.

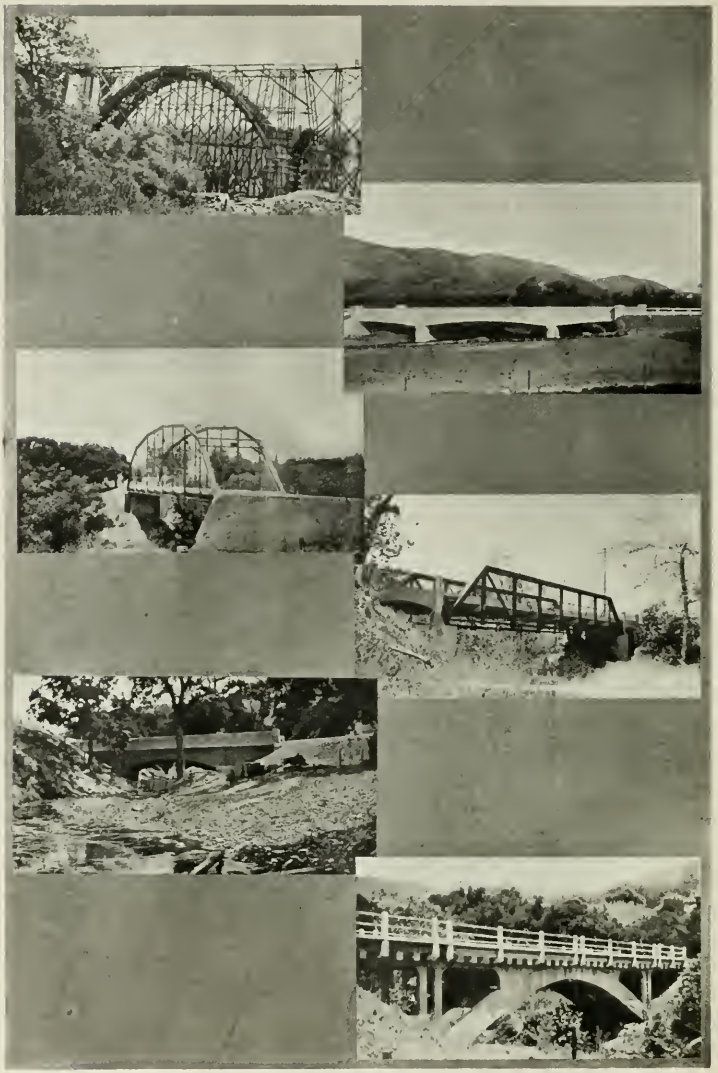
tain grading job on the coast route, eight firms submitted bids below the engineer's estimate, the lowest being some $21,000 low on a $70,000 job, and although given opportunity by the commission to withdraw his bid, insisted upon taking the contract. This contractor was additionally handicapped by inexperience on work of this magnitude, and the final outcome was a foregone conclusion, the commission finishing the work by day labor.

Another important source of failure was a lack of foresight on the part of contractors to investigate the country in which the work lay with regard to railroad facilities and availability of delivery points for concrete materials, and in consequence were compelled to haul long distances and to suffer vexatious delays in railroad deliveries. In highway construction only those contractors who keep their materials moving on schedule, their pumps and water lines in operating order, their concrete mixer and crews working full time for five or six days in the week, can hope for a profit on their work.

A notable failure from another cause was that of a contractor who presented a very acceptable bid and, although a newcomer to the State, received excellent credentials from banks and responsible business firms. This person immediately proceeded to apportion the major part of the work among excellent experienced sub-contractors, and after progressing satisfactorily and with evident economy for several months, suddenly disappeared, and investigation developed that, while he had collected all of the progress estimates to date, he had made only very small payments and large promises to his sub-contractors, who, of course, were the losers, and the job was completed by the State for the bonding company. This "crooked" failure was traceable indirectly to losses on another contract where the vital question of water supply in a desert country had not been sufficiently investigated in advance of bidding.

The rank and file of the organization and its mechanical equipment have an important bearing on the outcome of a contract, and it has been demonstrated time and again that an experienced crew of "huskies" at high wages ($3.00 to $3.25 per day) can lay concrete-base at a lower cost than untrained men at $2.25 per day. In general, experienced contractors with skilled working organizations and complete grading and paving outfits seldom submit other than conservative bids, and although such firms have at times suffered losses, there have been few, if any, failures. It is to be expected that the contracting firm owning its own equipment is in a better position to complete a job at a profit than the contractor who attempts to rent his outfit and build up an organization in a week. Rented outfits prove almost uniformly unsatisfactory. Hired steam shovels develop leaky boiler tubes at the most inopportune times; second-hand gas rollers have as many faults as second-hand automobiles; old concrete mixers cause more lost time and the demoralization of more concrete crews than any other cause; power pumps, gas engines and cheap, second-hand pipe lines will keep a good mixer tied up half the time.

A very good example, on the other hand, of what makes for success in contract work was furnished in October, 1914, when a contract was let for the grading of Cuesta Grade in San Luis Obispo county. The low bid approximated the engineer's estimate, and the contractor was skilled in heavy grading work. As the contract was let very late in the year, the writer was dubious of the successful prosecution of the work at a profit. Visions of steam shovels, wheelers, fresnos, and stock stuck in the mud or tied up by winter rains and slides were uppermost in the



TYPES OF BRIDGES BUILT ON THE COAST ROUTE, CALIFORNIA STATE HIGHWAY

minds of those who knew the country; but the contractor knew his business, and instead of rushing in the heavy equipment expected, he started work in a small way with a few head of stock, and after a personal absence of several weeks returned with a large number of Swede, Slavonian and Greek station men who sub-contracted to do portions of the work with pick and shovel. These gangs worked through practically the entire winter, despite the seasonal rainfall of 32 inches, and performed the work well and satisfactorily and to the profit of the contractor.

A quite common complaint among contractors on public work is the attitude of engineers and inspectors in a rigid interpretation of specifications, and it is an admitted fact that many engineers, especially the young men, are often arbitrary and unnecessarily technical in their rulings, having yet to learn where the line of demarcation between a reasonable compliance with, and an actual violation of, specifications begins and ends. On the other hand some contractors have a notorious disregard for specifications. Somewhere between these two conditions is a line of average pressure, susceptible, it is true, to some fluctuation above and below normal. The contractor who knows and appreciates this phase of construction practice, and the engineer with judgment to determine how far below normal the line may go, consistent with good practice and integrity of work, are a valuable and successful working combination capable of handling and completing satisfactorily and well large construction works. It should be remembered that the period of development of highway construction under commission control marks the transition from work under crude specifications and political inspection to uniform standard specifications and engineering inspection, necessitating, on the part of many of the old contracting firms, the learning of new and strange methods of work, and on the part of the inspectors the difference between material and immaterial specification clauses. Each party has much to learn from the other, and, although not without some discord and recrimination, the relations between contractor and engineer have improved in the light of experience gained, and the fact that the work is desirable from the contractor's standpoint is witnessed by the fact that most of the contractors that have constructed portions of the State Highway continue to seek the work.

The discussion that followed the reading of the paper was participated in by many of those present, and brought out some additional interesting points.

Major Park spoke of highways from a military standpoint, indicating the essential defensive features of an acceptable military road and explaining the impossibility of such a road exposed along the beach or coast skyline and the ideal nature of a route through the interior valleys.

Queries by Mr. Ellery of the speaker brought out the statement that in preparing the standard specifications, the various division engineers were consulted so far as their individual experience particularly qualified them in special lines; that the advisability of adopting or not adopting patented types of pavement was one of public policy, which the speaker was not answerable for; that experience indicated that the oil surfacing on concrete as laid had economical advantages over asphalt; that Topeka or sheet asphalt will crawl on a concrete base if not scientifically laid, and that all elastic surfaces tend more or less to crawl under traffic; that the durability of a concrete slab, unprotected by a special wearing surface, depended upon many conditions, but in one observed case a year's heavy traffic failed to cause serious damage. As to whether it would have been more economical to have used a thicker layer of concrete and a wider road-

bed. Mr. Howe stated that the thickness of the base was not as important as a substantial sub-base; that the thickness used was deemed sufficient on a good sub-base, and that a thicker base would be ineffective on a yielding sub-base. The width of the road-bed was determined by the amount of funds available, and in some cases has been subsequently increased by adding a shoulder to meet the requirements of traffic.

Messrs. Owens and Pidge spoke in complimentary terms of the road from Bakersfield over the Tejon Pass, and elicited the information that a certain generally smooth section of the road in the south that showed signs of failure in places was in fact an earth road rendered temporarily usable by an application of crude oil, pending final settlement of fill—a frequent expedient in doubtful cases.

Mr. Chadbourne's question regarding the commission's practice in regard to expansion joints brought out the fact that they are not used, the base being allowed to crack as it will, the cracks subsequently being filled with asphalt.

Inquiries by Mr. Thurston brought out information that the experiment of giving publicity to the engineer's estimate of cost prior to the receiving of bids had been tried by the commission, and the conclusion was against such publicity, for reasons not known to the speaker. With regard to complaints of early contractors that they were subjected to unreasonable expense by irregularities in deliveries of material by the State and by being required to permit traffic on completed sections of road without investigation of responsibility, Mr. Howe stated that, while the commission could not assume responsibility for delays of common carriers, it is now the practice on his division to co-operate with the contractor in the establishment of material stock piles at agreed places along the work to take care of fluctuations in deliveries; and, in case sections of road are ordered open to traffic prior to completion of entire contract, the commission will immediately accord final acceptance of such sections and relieve the contractor from further responsibility for same.

* * *

Structural Engineer as an "Artist"

In a paper on the Hell Gate Arch Bridge, Mr. Ammann, an Eastern engineer, said:

> Engineering structures are still regarded by many engineers as mere works of utility, which deserve no consideration in architectural or artistic treatment. So long as this opinion prevails the engineering profession will not lift itself to a higher plane, and it is even running the risk of being relegated to second place—or after the architect—in the creation of such monumental structures as properly belong in its domain.

True; and does it not also follow that, even in structures that are not monumental, the structural engineer has often been relegated to second place because of his failure to appreciate that esthetic treatment cannot be profitably slighted? Not long ago a structural engineer told the editor that it took him some time to learn why he could not sell his services in competition with architects. Finally he discovered that the average client is so greatly impressed by the wash drawings made by architects that the plain black and white drawings made by an engineer receive scant consideration. Thereafter he began to color his drawings, and coincidentally to secure commissions for the design of buildings. Moral: If you would win out as a structural economist, first get the job as an artist.—Engineering-Contracting.

That the engineer is not infrequently inclined to sacrifice the artistic for the practical, there can be no question. Only a few days ago this was

forcibly brought to our attention by a San Francisco architect who had been called in for advice by the mayor of a neighboring city. An engineer had submitted a plan of a concrete bridge which is to be built on a prominent street in the town. The site is in the heart of the residence district. Beautiful homes and gardens predominate the neighborhood. The engineer had submitted a drawing that called for a very substantial bridge, yet it lacked the artistic treatment which a structure in that part of the town seemed to require.

"There is something wrong about this design," said the mayor, "but we don't know what it is." The architect knew at a glance. He pointed out the defects and made a few suggestions. "I guess you're right," said the mayor, and he promised to consult further with the architect before accepting the engineer's plans.

* * *

Court Decisions Affecting the Architectural Profession

By A. L. H. STREET in Building Age.

AN architect is not entitled to recover compensation for preparing plans and specifications for a building of a character forbidden by law. This important point is declared by the Supreme Court of Pennsylvania in the recent case of Medoff vs. Fisher et al.

Plaintiff sued to enforce payment for services in preparing plans and specifications for a building to be used as a moving picture theater, and partly for stores and dwelling apartments, with a public bathhouse in the basement. He was denied the right to recover, because the building would infringe the statutes of Pennsylvania, which forbid occupation of any portion of a building in cities of the first class as a dwelling or tenement house, or department store, where the building is designed to seat five hundred persons or more as a moving picture theater, and which provide that a building seating more than five hundred persons shall not be used for any other purpose.

The court holds that all men are supposed to know the law, and that one who holds himself out to the public as an architect is particularly charged with knowledge of the regulations and restrictions governing the erection and use of buildings.

"We must assume both the plaintiff and defendants knew that the uses to which the latter contemplated putting the proposed structure were forbidden under a criminal penalty by the statutes of Pennsylvania," reads the opinion in the case. "Thus, it may be seen, we have the plain case of three men, the defendants, intending to do a forbidden thing, employing a fourth, the plaintiff, to assist them in making plans to carry out their unlawful purpose, in other words, a combination which could be indicted as a criminal conspiracy. Of course, no contracts or engagements entered into under such circumstances will be enforced at law."

ARCHITECT'S LIABILITY CONCERNING PLANS

An architect is not liable for injuries sustained in consequence of defects in plans prepared by him, if he has exercised a reasonable degree of skill and care in his work. Nor, in any event, can he be held liable for injury flowing from collapse of a building due to defective construction, in the absence of proof that his plans were followed. These two points were declared the other day by the Michigan Supreme Court in the case of Bayne vs. Everham et al.

This suit was brought against the owner of a garage, which collapsed in the course of construction, and the architect and contractor engaged in the work. Damages were sought by plaintiff as administrator for death of a

workman who was killed in the accident while discharging his duties as a carpenter employed on the structure.

The court finds that no cause of action was proved against the architect, within the following principles of law applicable to the case:

"In Corpus Juris, vol. 5, p. 269, the rule is stated as follows: 'In the preparation of plans and specifications, the architect must possess and exercise the care and skill of those ordinarily skilled in the business; if he does so, he is not liable for faults of construction resulting from defects in plans, as his undertaking does not imply or guarantee a perfect plan or a satisfactory result, it being considered enough that the architect himself is not the cause of any failure, and there is no implied promise that miscalculations may not occur.'

"This court has held that the responsibility of an architect does not differ from that of a lawyer or physician. When he possesses the requisite skill and knowledge, and in the exercise thereof has used his best judgment, he has done all that the law requires. The architect is not a warrantor of his plans and specifications. The result may show a mistake or defect, although he may have exercised the reasonable skill required."

Supporting its decision on one phase of the case, the Michigan court refers to a New York case—Lake vs. McElfatrick—wherein damages were sought against an architect for defective plans and specifications furnished by him for the erection of a theater building. The sole defect complained of was the proscenium arch. This was designed to rest upon stone skewbacks. Their office was to furnish a firm foundation for the arch, and distribute its thrust over a large area of the abutments. Instead of using stone skewbacks, brick was substituted. The trial court permitted plaintiff to recover, and the New York Supreme Court affrmed the judgment. The Court of Appeals, however, held that the suit should have been dismissed upon the ground of a failure to prove that the arch was constructed in substantial compliance with the plans and specifications furnished by the defendant.

WHEN THE ARCHITECT'S DECISION IS BINDING

Under a contract for the building of a dormitory, a sub-contract was entered into for the installation of fireproof material, the supervising architect approving the plans submitted by the sub-contractor. The sub-contract specified that unsatisfactory work or materials should be replaced on proving to be unsatisfactory to the architect, and contained the usual provision making the architect's decision upon disputed matters binding on both parties. The specifications called for a certain test to be applied to concrete floors after the floors should have been in place for forty-five days. In constructing the floors, the sub-contractor spaced the joists in claimed compliance with the plans approved by the architect, and refused to comply with his order to reinforce the joists. In litigation growing out of this and other disputes arising under the sub-contract, the sub-contractor relied on the architect's approval of the plans and on the provision for test above mentioned. But the United States Circuit Court of Appeals, Eighth Circuit, holds that the architect's requirements for reinforcement was regular, saying:

"The preliminary approval of the plans was not the only permissable use of the architect's discretion, for the contract allowed the condemnation of 'work done or materials provided.' Neither was the judgment of the architect required to be based on any particular tests. The amount of deflection of the floor joists when the test load was applied to them, and the probable effect of that deflection upon the terazzo floors to be laid upon them, when such floors should be put to the strain of use, justified the architect in condemning them and in avoiding the delay that would ensue if the floors were finished before a test was made." (Berger Manufacturing Co. vs. Huggins.)

In the same case it is decided that the sub-contractor could not avoid responsibility for delay in furnishing certain materials because the delay was caused by another to whom the manufacture of the materials was sub-let by the sub-contractor.

Open Grate Fires Wasteful

By VAN H. MANNING, Director of the Bureau of Mines, Department of the Interior

THE chilly days of winter call attention to the proper use of the grate fire by those who will try to help the country save coal. When the need of using fuel economically is as strong as it is now, we can say, twisting our words a bit, that the proper way to use the grate is to use it not at all. If we look at the open grate as merely a heating device, and know how small a proportion of the total heat in the fuel enters the room to be warmed, we must regard the open grate as probably the most inefficient of all the inefficient devices used in heating a house. The cheer and companionship of an open-grate fire must not be charged against the heating bill, but to some other account.

Efficiency is always a ratio or fraction, and is what you get out compared with what you put in. Into the grate one puts fuel that has the ability to produce a large amount of heat, but the useful heat obtained from this fuel is relatively small. Most of the heat in the fuel goes racing up the chimney, in company with a large amount of air from the room, this air being replaced by cold air drawn in through cracks and crannies in the windward side of the house. As a device for drawing in cold air a grate is excellent, but it furnishes much more ventilation that is needed. Much less fuel, properly burned in a stove, would warm the house better.

The grate fire is such a cheerful, lively member of the household on chilly mornings and evenings, that it is loved in spite of its spendthrift ways. The present fuel situation, however, suggests that the grate should be filled with coal much less often than in the past. It should be used when only a little heat is needed for a short time. It should be fed on waste wood as much as possible. The flickering flames of a smaller fire may be made sufficient to excite the fancy rather than the scorch and the big roar of too full a fire place. When steady heat is needed, economy suggests doing without the cheer and running the more sedate stove.

* * *

Unique Record on Government Work

THE biggest of the cantonments built by the United States Government for housing and training of the new army is located at American Lake, about eighteen miles east and south of Tacoma, Washington. Camp Lewis is not only the largest of all the cantonments, but the record of its construction is unique in other respects. It was completed within eight weeks from the time the construction chart was finally approved by the Government on July 10. It was built under Government contract by the Hurley-Mason Company, a concern with headquarters in Tacoma and of wide experience in the Northwest field. Naturally, more men were employed in construction than at any other cantonment, the pay roll starting with 5,000 men and, in the latter stages, numbering more than 10,000.

There have been no disputes between the contracting firm and the Government or the local authorities.

There have been no strikes, nor any trouble with labor beyond the inevitable shifting of personnel at each pay day.

There was little or no sickness among the men employed.

An idea of the size and scope of this work may be outlined with a few figures:

Camp Lewis occupies a military reservation of 70,000 acres, and has been built to accommodate 48,000 troops.

The cantonment includes four brigades of infantry, one of heavy artillery, one of light artillery, engineers' regiment and train, supply train, ammunition train, signal corps, headquarters' buildings, hospital corps and remount stables.

The main cantonment is built in the form of a U, with division headquarters' buildings at the base, and the other structures extending up the sides.

The service railroad, running for one tip of the U, around the base, and on to the other tip, is five miles in length.

There are 1,148 substantial frame buildings in the U.

A little way apart from this main group are erected 200 stables for remounts.

Near the base of the U, in a pretty grove, stands the hospital group of fifty-eight buildings.

One thousand four hundred and six buildings in all have been erected.

The permanent water system, with unlimited supply and capacious reservoirs, carries twenty-five miles of mains.

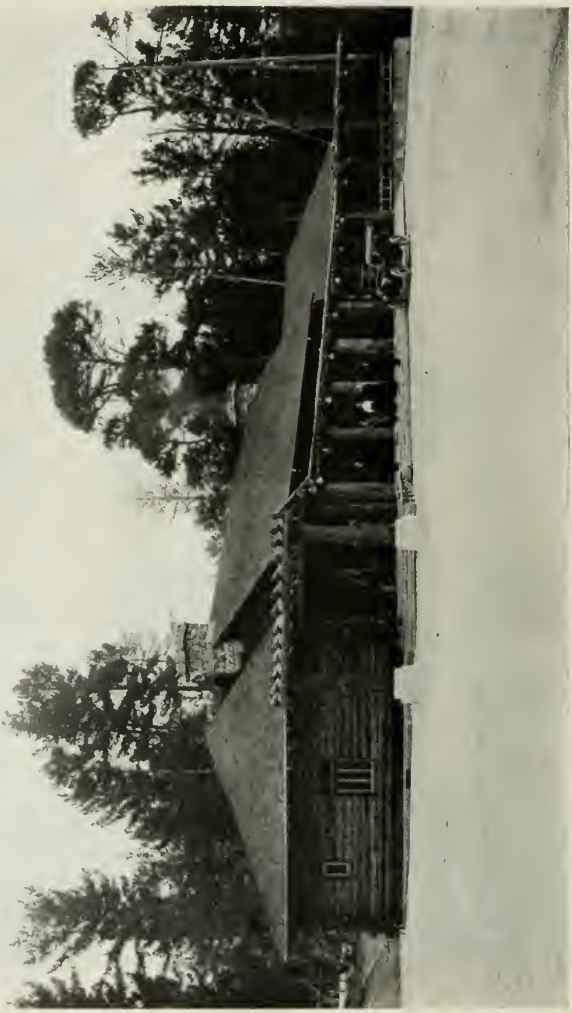
The permanent sewage system, extending to deep water in Puget Sound, has twenty-four miles of sewer pipe.

Camp Lewis was built on the cost plus percentage plan, and the whole work has been under the direction of Major David L. Stone, U. S. A., constructing quartermaster. Improvements to the site, road building, installation of the water system and sewer construction, called for expenditures in excess of $1,000,000. The first estimates on building construction gave an approximate total cost of $4,000,000, but additional work, such as the 200 remount stables, has been required from time to time, so that the final figures of cost will exceed the first estimates. Mr. Charles S. Alden, a member of Washington Chapter, A. A. A., was the architect of the cantonment.

It may not be without interest to mention the quantities of some of the more important materials used in the work:

Building Material	
Lumber	55,000,000 Feet BM
Sash	84,900
Doors	13,050
2-Ply Roofing Felt	78,644 Squares
1-Ply Roofing Felt	16,933 Squares
Building Paper	15,586 Rolls
Wall Paper	519,560 Sq. Feet
Cement	10,010 Bbls.
Sand	4,751 Cu. Yds.
Gravel	5,690 Cu. Yds.
Nails	7,426 Kegs
Heating Material	
Radiation	82,584 Sq. Feet
Steam Boilers	147
Stove pipe	33,771 L. F.
Elbows	3,924
Electrical Material	
Lamps	20,000
Drop Cord	57,000 Feet
Fuse Plugs	16,000
Wire cleats	240,000
Screws	545,000
Insulated wires	1,300,000 Feet
Water Pipe	
Wood Stave pipe 6" to 14"	95,000 Feet
Iron Pipe ¾" to 2"	125,000 Feet
Sewer Pipe	
Vitrified 6"-24"	115,000 Feet
Concrete 6"-30"	55,000 Feet
12" Steel Pipe	568 Feet

"THE PIONEERS," BY JOHN McQUARRIE
Plaster model to commemorate the coming of the Donner party to California, from which bronze statue is being made by Louis Rome



PEBBLE BEACH LODGE, NEAR DEL MONTE, RECENTLY DESTROYED BY FIRE AND WHICH IS TO BE REBUILT THIS SPRING
LOUIS C. HOBART, ARCHITECT

Notes on Prepared Paints for Metal Surfaces*

By HENRY A. GARDNER, Assistant Director of Industrial Research.

Mr. Henry A. Gardner, Assistant Director of Industrial Research in Minnesota, recently read a paper before the Affiliated Engineering Societies of Minnesota, on "Prepared Paints for Metal Surfaces." The paper has been given not a little publicity by various technical and trade journals which unfortunately have not seen fit to call attention to certain contradictory statements that ought not to go unchallenged. The editor of this magazine submitted Mr. Gardner's paper to Mr. H. T. James, vice-president and general manager of the Bass-Hueter Paint Company of San Francisco, who states that while there are some good points contained in the article, a number of debatable statements are made which leads one to question the author's practical knowledge of his subject.

"The principal point that I criticise," says Mr. James, "is the statement in regard to Red Lead Priming Paints that the cementing action in connection with the use of red lead is due to the presence of unburnt litharge, and that red lead free from litharge has no cementing action. This is not the case.

"The proportion of red lead for priming is correct.

"I do not agree with him at all in his statement regarding the nature of a marine paint for both anti-fouling and anti-corrosive. The portion of the article pertaining to painting galvanized iron and painting tin surfaces is correct."

Mr. Gardner's paper in full follows:

IN DESIGNING protective coatings for metal the modern practice has been to apply the results available from researches into the cause of corrosion. These results have shown that materials of a basic nature or substances which contain soluble chromates prevent the rusting of iron. For this reason pigments of a basic nature or pigments containing the chromatic radical have come into wide use in the manufacture of protective paints. That they are the best pigments for this purpose has been proved not only in practice, but also in the Atlantic City tests, which were made upon a series of 300 large steel panels, using nearly one hundred different pigment paints. Applying the results of these tests to the practical manufacture of protective coatings, the writer will discuss the use of the various pigments under separate headings, taking up the composition of the most widely used colors for metal painting, namely, red, gray, black and green. Most of the paints outlined herewith are suitable for the painting of structural steel, bridges, steel railroad cars and equipment, ornamental iron work, poles, posts and for general work on metal surfaces.

Red Lead Priming Paints.—Red lead may be purchased in the market ground to a heavy paste in linseed oil, ready to thin with oil for use. Such red lead is usually produced by the thorough oxidation or overburning of lead, the dry pigment generally containing approximately 98 per cent of lead tetroxide. This pigment, being practically free from litharge, does not react to any great extent upon the linseed oil in which it is ground, and therefore remains soft for a considerable period of time. It is well understood, however, that one of the most valuable properties of red lead is its ability to set up to a hard, elastic film that shuts out moisture and gases which are apt to cause corrosion. This cementing action is due to the presence of unburnt litharge, a pigment which rapidly reacts upon linseed oil to form a lead linoleate compound. It will readily be seen, therefore, that red lead free from litharge has no cementing action and should not be considered more protective than iron oxide or any other similar neutral pigment. It is thoroughly essential that red lead should be highly basic and should contain a considerable percentage of litharge, if the red lead is to protect iron from corrosion. Although such red lead

* Paper read before the Affiliated Engineering Societies of Minnesota.

is often purchased in the dry form and mixed with linseed oil on the job at the time of application, it is a growing custom to use prepared red-lead paints made from finely divided red lead ground to a fluid condition in linseed oil. Such paints remain in excellent condition for a long period of time. They have a high protective value and are well suited for general purposes. They are used extensively for priming steel vessels. The Navy Department has found that inert pigments, such as silica and asbestine, give good results when used in ready mixed red-lead paints, their action being to prevent settling of the red lead upon storage.

A specification which may be used by the grinder when purchasing dry red lead for the manufacture of prepared paints is given below:

1. The dry pigment to be of the best quality, free from all adulterants, and to contain not less than 85 per cent nor more than 90 per cent Pb_3O_4, the remainder being practically pure lead monoxide (PbO).

2. It shall contain not more than 0.1 per cent of metallic lead nor more than 0.1 per cent of alkali figured as Na_2O.

3. It shall be of such fineness that not more than 0.5 per cent remains after washing with water through a No. 21 silk bolting-cloth sieve.

NOTE.—If desired, the gram weight of the red lead may be specified. Extremely light fluffy red lead should run from 10 to 13 grams per cubic inch. Medium red lead will run from 13 to 16 grams per cubic inch. Heavy red lead will run from 17 to 19 grams per cubic inch.

Composition of Red-Lead Priming Paints.—The cost of red-lead paints is a subject of vital importance to the large user. Red lead may be produced in different physical states. Ordinarily the grade that has been overburned is extremely heavy, 1 cubic inch weighing from 18 to 20 grams. For the production of a paint from such red lead, according to the formula used by one large consumer, the following quantities would be required:

Red lead	26 lb.
Linseed oil	26 gills
Petroleum spirits	3 gills
Drier	3 gills

This would produce approximately 1 2/5 gallon of paint. Each gallon would contain about 20 pounds of red lead. A red lead of a much better protective value, containing from 10 to 12 per cent of free litharge and produced in an extremely fine physical state of comminution, so that 1 cubic inch would not weigh over 12 to 15 grams, would produce a paint of exactly the same body on the following formula:

Red Lead	20 lb.
Raw linseed oil	26 gills
Turpentine	3 gills
Drier	3 gills

This would produce approximately 1 1/3 gallon of paint, each gallon of which would contain about 15 pounds of red lead. Red lead of still lighter gram weight could be used, so that a still smaller quantity of pigment would be required per gallon of oil. The durability of such paints should compare favorably with those containing very high percentages of red lead of high gram weight. Pigments of an extremely light nature, such as lampblack, grind in very large quantities of oil, yet their films are more elastic and durable than many paints which are composed of much pigment and little oil.

Red Paints.—Iron oxide has always been one of the most widely used pigments for the manufacture of protective coatings. Oxides that are free from acid or soluble substances give the best results. There are many

grades, from the brilliant Indian reds, containing 98 per cent, down to the natural mined brown shale oxides, containing from 30 to 60 per cent of ferric oxide, the balance being silica, clay, etc. Venetian reds, consisting of about equal parts of ferric oxide and calcium sulphate, are also quite widely used. It is customary to add to iron oxides from 10 to 20 per cent of zinc chromate, zinc oxide, or red lead, in order to make them rust inhibitive. Such red paints are widely used for application to tin roofs, metal siding, and general structural steel. Red paints made from basic lead chromate (American vermilion), the pigment which gave the best results in the Atlantic City tests, would doubtless be the most economical in the long run, but the high cost will probably prevent their use to any great extent. The use of a percentage of basic chromate of lead in iron-oxide paints is to be approved.

Gray Paints.—Mixtures of white lead (basic carbonate or basic sulphate) and zinc oxide, tinted gray with carbon black, are widely used for this purpose and give excellent results in every climate.

A valuable rust-inhibitive coating for general priming or finishing work may be prepared from sublimed blue lead. The use of two parts of blue lead and one part of linseed oil containing about 5 per cent of turpentine drier makes a paint of the right consistency. This may be purchased in prepared form. When this paint is used for top-coat work in marine exposures (battleship gray), the addition of 1 per cent of carbon black to the blue lead aids in the maintenance of the color. The rust-inhibitive value of this pigment is due to the high percentage of lead oxide (litharge). This pigment, however, is so combined with the lead sulphate that it does not have any great hardening action upon the linseed oil and stays in an excellent condition in paste form for a long period of time without hardening. When purchased ground to a paste in 10 parts of oil, there should be added approximately 5 gallons of linseed oil and one pint of drier for use. A specification for the purchase of blue lead for use in metallic paints is given herewith:

	Minimum.	Maximum.
Lead sulphate	44%	52%
Lead oxide	33%	40%
Lead sulphide		0.5%
Lead sulphite		3.5%
Zinc oxide		3.0%

Black Paints.—Black paints are often preferred for the finishing coat on steel work, carbonaceous paints being unsuited for application direct to the metal on account of their rust-stimulative action. Carbon pigments, such as gas carbon black, oil black, artificial and natural graphite (flake and amorphous) are usually the base pigments used in black paints. Silica and other earth pigments may be combined with the carbon. The slow-drying nature of such paints is lessened by the addition of litharge. The use of boiled linseed oil as a vehicle is advisable.

Magnetic black oxide of iron (precipitated) forms an excellent black protective paint when ground in linseed oil. The slightly basic character of this pigment accounts for its inhibitive value. The natural variety of black magnetic oxide of iron is also suitable for this purpose, but should be tested for freedom from soluble acid impurities before use. Willow charcoal is not made in commercial quantity; its use, therefore, will be restricted. Its inhibitive value depends upon the basic nature of the impurities present.

Green Paints.—Mixtures of zinc chromate and Prussian blue in oil are highly inhibitive and have proved satisfactory in long service tests.

Chrome yellow tinted with black oxide of iron to an olive shade is very permanent and protective. Chrome green made from lead chromate and Prussian blue is generally used when precipitated upon a barytes base.

Marine Paints.—Steel vessels traversing bodies of salt water are rapidly acted upon, corrosion and incrustation by marine growths being shown. The bottoms of boats are usually protected by applying over the red-lead priming paint a coat of anti-corrosive paint containing iron and zinc pigments ground in a shellac-alcohol vehicle. There is subsequently applied a coat of anti-fouling paint, usually made of iron oxide, zinc oxide and metallic zinc powder, admixed with a poisonous compound such as red oxide of mercury or bichloride of mercury. The upper portions of vessels are usually painted with a linseed-oil paint, the standard slate color of the Navy Department consisting of a mixture of white lead and zinc oxide tinted gray and ground in linseed oil. This is, of course, applied over a prime coating of prepared red lead. The boot topping or water-line paint is generally of a bituminous nature, the exposure at this point being extremely severe. Chinese wood-oil varnish improves the bitumen base.

Bituminous Paints.—Bituminous coatings have a wide use for special purposes. They are often made by blending refined coal-tar pitch, asphalt, linseed oil and oleo-resinous varnishes, subsequently thinning down the turpentine or light mineral thinner. During recent years a heavy-bodied blown petroleum residual pitch has come into wide use in the manufacture of waterproofing bituminous paints. This pitch usually has a high melting point (150 degrees C.). It is soluble in turpentine, benzol, and some mineral distillates. When in solution it may be admixed with oils for the production of rapid-drying elastic paints. The pitch has high resistance to acids and is not acted upon by the sun to the extent that coal tar is.

When coal tar is used in the manufacture of paints, it should be refined. Ammonia and water in the tar are the active causes of saponification or non-adherence to metal. The presence of large quantities of free carbon or naphthalene in the tar will cause disintegration and checking. For refining, the crude tar may be heated to approximately 115 degrees C., holding it at that temperature until the water is evaporated. From 5 to 10 per cent of lime may be stirred in, in order to neutralize the free acids. The tar may then be thinned with benzol or mineral spirits. If a rapid-drying paint is desired, a quantity of resinous varnish may be added. The addition of Chinese wood oil anud asbestine in a coal-tar paint made along the above lines will aid in producing a film that is not so subject to alligatoring when exposed to the sun.

Bituminous paints of the above composition are used as coatings upon pipe-lines in acid factories, tanks containing dilute acids, metal submerged in water, and for other similar work. For such purposes it is generally advisable to first coat the metal with a thoroughly hard drying prime coating made by adding 2 pounds of litharge to a prepared red lead or other rust-inhibitive paint. The bituminous paint may then be applied. Steel mine timbers subjected to sulphur water and gas, reservoir tanks containing water, submerged lock gates, tunnel metal, etc., may be efficiently preserved from corrosion by this method.

Painting Galvanized Iron.—Roofing, siding, railing, drain pipes, cornice work, etc., constructed of galvanized iron, require painting if they are to be kept in a good state of preservation. Paints are apt to peel from galvanized iron on account of the smooth, spangled surface. This condition, however, is obviated by first treating the metal before painting with a

solution of copper salts. Such a solution may be prepared by dissolving 4 ounces of copper acetate, copper chloride, or copper sulphate, in one gallon of water. By brushing on this solution the galvanized iron is roughened, a thin deposit of copper being plated out over the surface. After an hour or so, the surface may be lightly brushed and then painted with a thoroughly inhibitive oil paint. Firmly adhering films are thus produced.

Painting Tinned Surfaces.—Tin plate, such as is used for roofing and siding, will rapidly corrode unless protected by paint. The pin-holes present in the tin coating on the steel base metal act as pockets to catch moisture, which causes rust spots and pit-holes. Before applying paint to the sheets it is advisable to rub the surface of the tin with a cotton rag saturated with benzine or turpentine. This will remove the palm oil that is present upon the surface and allow the paint to firmly adhere. Iron-oxide paints containing an inhibitive pigment are widely used for preserving tin. The use of 15 to 20 per cent of zinc oxide, red lead, or zinc chromate with a neutral bright iron oxide produces an excellent paint. The partial use of boiled linseed oil or kauri gum mixing varnish will add to the gloss and water resistance. Such paints are also suited for use on metal shingles and pressed-steel siding—plain black, galvanized or tinned. For dipping purposes, turpentine or high boiling point mineral spirits should be used for thinning. Cheap driers containing a low boiling point benzine should be avoided.

* * *

Apartment House Like an Old English Clean Home

Among the notable building improvements which are in progress on the upper west side in New York City is the structure at the corner of Central Park West and Ninety-seventh street, which is of the old English type and only six stories high, while most apartments erected in sections of the character of the Central Park West site are twelve stories high. The builder, Fred F. French, has ideas of his own and one of them is that a house of six tiers would be just as agreeable and financially as successful as a taller structure.

The facade is to be of brown brick broken by sections of a lighter shade panelled and stripped as in the Elizabethan style of architecture. These sections are decidedly interesting with their gable roofs and dormers effecting the home-like warmth and quaintness of the old English home.

The arrangement of the building is such as would give the impression of five separate houses, this impression being increased by the fact that each unit is architecturally just a little different from the other. At the street level of each of the openings or courts between the units are garden walls with an old fashion arch door topped by a quaint lamp. On the top of these walls are to be flower boxes suggesting to the person on the street side of the wall the beauty of the area within the enclosure.

The apartment is designed particularly for families desiring small suites or for single men or women whose incomes are sufficient to pay from $700 to $1,800 a year for an apartment which may range in size from three to seven rooms. The suites will have unusual natural light as the building fronts on Central Park on one side, on Ninety-seventh street on the other and on the south it looks out over the edifice of the adjoining church.—Building Age.

Venetian Monuments in War Garb

IN accordance with Italy's customary solicitude in all matters regarding the fine arts, most detailed precautions on the part of the Italian national ministry and similar commissions in a number of cities have been taken toward protecting historic edifices and their precious contents against destruction by military and naval forces, but most of all against aerial attack. The region of Italy most directly affected, considering the geographic location of the nations now in conflict, would be that of Venice and the surrounding territory of the province of Venetia.

The proximity of Venice to the Austrian naval bases at Trieste or even Pola, a matter of from 80 to 100 miles, and the particular nature of the terrain immediately surrounding the city, with its waterways, lagoons, marshes, not to mention its actual small size and crowded buildings, all aid in rendering aerial attack a simple matter, as the frequency of Austrian bombing expeditions seems to show. What is more, the plentiful areas of water, with a clear moonlight playing upon them, serve as a frame for the city, and provide for the airman a sort or target. While old St. Mark's is the bull's-eye of such a target, a hit anywhere within the limits marked out by environing waters would be sure to score destruction in some work of antiquity, for practically all of Venice is old; we have only to consult records of building activity there in recent times to learn that several centuries have witnessed the removal of but a very small number of old structures to make way for new, while the actual addition of modern buildings is of negligible quantity. If with these conditions in view an enemy attack by means of hydroplanes were considered, it would be seen that the many bodies of water would provide ample space for landing of machines before or after attacks, while their small size and the noise and roughness of open water would furnish added concealment. As seen from above, and especially in the light of the moon, these same bodies of water served the airmen as a suitable frame for their objective. The defense of the city had, therefore, to rely not so much upon fortifications as upon mobile air forces as the surest safeguard at longer distance. But such defense depended upon previous notice of an approaching enemy, and, granted that such warning was too brief, the actual struggle between friend and foe would have to take place in the air above the city itself, with consequent aggravation of any damage the enemy could accomplish.

Venetians were obliged, as a result of these many unfavorable conditions, to resort to the last possible defense of all, namely, that of removing all portable art objects, in many cases to the south of Italy; in many others to cellars and sand pits near the city or within its confines. In the case of entire buildings, on the other hand, a most careful program of preservation and protection was worked out, involving such a packing with sand and burlap, and such a boarding up with planks and timber, as to disguise effectively nearly all of the most important buildings in Venice. But these precautions were the result, curiously enough, of a campaign—largely under the direction of Corrado Ricci, of the Italian ministry of fine arts, and of Gino Fogolari, supervisor of all galleries in Venice—for the citizens could not bring themselves to believe in the reality of an enemy attack; and it was not until a number of attacks on Ancona, Ravenna and finally a bomb within a few feet of the central door of St. Mark's, had proved this reality, that many Venetians were willing to set aside the original sentiment: If Venice must fall, let her fall in the midst of her beauty.

As a rule, sandbags and timber best served this purpose, but in the case of certain special problems new methods had to be devised. Such methods

were necessary especially in connection with St. Mark's, the Palace of the Doges, and numerous frescoes and other mural decorations not removable.

In the first place, it should be borne in mind that it was not possible, because of local conditions of the soil, to build any inclusive structures of metal to shield any one building, as, for instance, the church of the Scalzi, which together with all other vaulted structures, not to mention their invaluable decorations, had to rely chiefly upon the precarious protection of lighter defenses, as will be shown. What is more, most of the vaulted structures were themselves too slight to bear the additional weight of any protecting construction above them; referring to the Scalzi again, we find Tiepolo's frescoes painted upon a very thin coat of plaster set against a slight wooden false work in vault form. For this reason the Austrian aviator was able to make such thorough work of the destruction of the great painting of the Translation of the Santa Casa to Loretto, in October, 1915, the bomb having penetrated to the void between roof and false vault, and, exploding there, scattered roof tiles to the winds and demolished the fresco to such an extent that all hope of assembling any of its parts had to be abandoned.

In the case of St. Mark's, arose the problems of protecting the domes, of removing all portable sculpture and other objects, and of building sand shields around practically the entire facade. The protection of the domes—that is, of the wooden and lead-covered exterior domes—had been begun before the war by Luigi Marangoni, guardian of the structural fate of the old basilica—curiously enough still so called though not of basilican plan: this architect had caused to be poured over the entire superficies of all five domes a thin coating of cement mortar, thus giving each a sort of armor plate of sufficient elasticity to offset partially the effect of serious concussions or even of actual blows. The facade of the building, with its double tier of small columns and its myriad materials and colors, was enclosed in sand bags and wood boarding. Many detachable figures have been buried in sand, in some cases even in sand first baked at high temperature to destroy all possible source of decay. So great an addition to the weight of the entire building was made necessary by these many sacks of sand that the main piers of support had to be greatly strengthened in the crypt. To guard against incendiary bombs, a water system was installed, serving all parts of the edifice from crypt to domes. Most interesting is the precaution taken in protecting the interior dome mosaics. Owing to the nature of the material, it was found that mosaic compositions subjected to great concussions of air fell outward, the resulting loss being usually greater than would have been caused by an acetual penetration by a shell. The effect is very similar to that to be observed near the scene of explosions, where it is found that windows of neighboring buildings invariably crash outward, as a result of the sudden release from the equally sudden compression of air, the glass being insufficiently elastic to withstand the difference in pressure, which difference operates as a powerful suction. To guard against such destruction of mosaics it was found advisable to stretch curtains of strong linen before the walls, or in this case inside the domes bearing mosaic compositions. By this means a cushion of air was formed between the mosaic and the linen, with the result that this absorbed the force of a nearby explosion, thus saving the mosaic and the wall, and even in some cases saving windows.

The Palace of the Doges offered a particular problem, for the reason that any blow at its exterior columns at the level of the Piazza would have entailed the fall of the entire structure, or at least the effective dis-

ruption of the entire exterior design. All interior paintings by Veronese and others were fortunately on canvas and were rolled up on wooden cylinders for storage or transportation to safer regions. The building itself was made safe against marine or aerial destruction, that is, against missiles sent directly or diagonally at the facades, by means of the construction of a new pier inside each arch of the main story facade. But so that these additional piers might not exert any actual and as yet unnecessary supporting strength, in conflict with the columns and arches, they were made to terminate so as to leave an infinitesimal space beneath the arch in each case, and, finally, to prevent any new mortar from destroying existing patinas, this intervening space was filled with a piece of cloth covered or saturated with paraffine. Owing to the excessive weight of such an addition of material, a similar scheme could not be carried out in the second story loggia, and in this case a framework of wood was substituted. In the courtyard, again, the bronze well curbs, the Giants' Staircase, with its reliefs and figures by Rizzio and Pietro Lombardo, received the usual mantle of sacks of sand.

In similar manner the fine Colleoni at Venict, the tombs of the Scaligers at Verona, the great Giovanni's Fountain of Neptune at Bologna and other free standing sculptural and architectural works have received each its war garment of sand and wood and metal, for in such cases it was found possible to erect steep pitched roofs of wood covered with steel as an additional protection.

The Italian has taken every precaution, but he is—in Venice at lease—almost directly on the firing line. In America we look with awe upon the very need for such protection and with characteristic indifference wonder if the great conflict will ever be brought so close to our doors.—Richard F. Bach in The Architectural Record.

"DUNWANDRIN," HOME OF MR. C. H. BALCH, NEW ROCHELLE, N. Y.

Unusual Failure of Reservoir's Roof at Pasadena

AN unusual failure of a wooden roof covering a reservoir at Pasadena is described in the last annual report of Mr. S. B. Morris, Chief Engineer of the water department. The roof was on the Wilson Avenue reservoir.

This reservoir was constructed during 1909 and 1910 by the Lake Vineyard Land and Water Co. and was acquired by the city in 1912. It has a capacity of 13,000,000 gallons. The dimensions are 414x283 feet, 17 feet deep, with 1:1 slopes. The lining is 4 inches of concrete, except the south wall, which is 6 inches thick, all without reinforcing. The reservoir cost $31,000, including the wooden roof.

The roof was constructed of 1-inch x 12-inch and 1-inch x 10-inch rough Oregon pine boards laid on 2-inch x 8-inch joists 16 feet long on 4-foot centers, which were placed on two 2-inch x 10-inch girders spiked together and on 15-foot 10-inch centers. Posts consisted of 2-inch standard weight pipe dipped in asphaltum and capped at the lower end, while the upper end penetrated about midway into a 6-inch x 6-inch x 3-foot corbel. The sills were not fastened in any way to the concrete, nor was there any bracing of any kind used in the roof.

Inspection of the roof a few minutes after its failure clearly showed the cause of the collapse. The morning of the accident was perfectly clear and quiet, nor had there been any storm of any kind for some time. The joists at the east and west banks were supported by 4-inch x 4-inch girders resting on 4-inch x 4-inch posts 6 inches high on the 2-inch x 6-inch redwood sill. Earth and gravel on top of the concrete gave clear evidence of the position of the redwood sill prior to failure. For nearly the entire length of 414 feet on the east side the sill projected only 2 or 3 inches on the concrete, and was very much raised on the outer edge, thus tending to overturn the 4-inch x 4-inch x 6-inch posts. This action had apparently gone on for months with the strains of various temperatures and dampness. As soon as the roof started to push westward it slid down the 1 to 1 slope, the whole roof moving as one unit, and pushed over the west bank for one 16-foot section, the next 16-foot section rested against the slope, and the other sections floated on top of the water, the reservoir being about half full. The only boards broken were a few along the west bank where the roof broke into two 16-foot sections extending the whole length of the reservoir.

The roof was removed by allowing the water in the reservoir to run out until the roof rested on the bottom, after which all lumber was removed, allowed to dry, and then dipped in a crude oil preservative, thus putting it in better condition than before the collapse.

In rebuilding the roof it was decided to use 6-inch x 6-inch redwood posts instead of the 2-inch pipe posts, which were in bad shape from pitting. The pipe was sold for 10 cents per foot, which was sufficient to pay for the 6-inch x 6-inch redwood posts. A summarized statement of the cost of reconstructing this roof is shown in Table I.

TABLE I—COST OF SALVAGE AND RECONSTRUCTION OF COLLAPSED ROOF OF WILSON AVENUE RESERVOIR.

Book value of roof at time of collapse March 25, 1917			$7,291.67
Value of materials recovered from wreckage:			
Appraised value of materials used in reconstruction	$3,427.87		
Appraised value of materials taken to store room	31.15		
Materials sold	566.50	$4,025.52	
Cost of recovering materials from wreckage		719.93	3,305 59
Net loss			$3,986.08

COST OF NEW ROOF CONSTRUCTED BY WATER DEPARTMENT.

Description	Labor.	Auto and team service.	Material supplies.	Cost per 1000 ft.B.M.
Transportation and setting up dipping kettle for dipping lumber	$ 12.98	$ .75	.....	$ .063
Cost of dipping lumber	242.96	11.70	$ 261.84	2.356
Labor and material used in constructing roof	925.38	12.30	5,079.43	27.442
Hauling and transportation of materials	69.10	42.75	.21	.511
Engineering and supervision	184.04	42.40	.60	1.035
Overhead	.....	.....	.....	2.329
Total	$1,434.46	$109.90	$5,342.08	$33.736
Cost per 1000 ft. B. M.	$ 6.542	$ .501	$ 24.364	
City's appraised valuation November 1, 1912	3,134.26	.....	4,820.67	
Construction Cost to Lake Vineyard Land & Water Co.	3,264.85	.....	5,068.49	

Number of feet of lumber used in construction, 219,262.
Average cost of lumber per 1,000 ft., $21.69.
Total cost per square foot of roof, $0.0552.

* * *

Mr. Arthur Brown, Jr., Accepts Chair of Architecture at Harvard University

MR. ARTHUR BROWN, Jr., of the firm of Bakewell & Brown, architects of the new San Francisco City Hall, Horticultural building at the Panama-Pacific Exposition, and other notable structures, is going to the Harvard Faculty for the spring term. Mr. Brown will continue his work with Bakewell & Brown as heretofore, and be constantly in consultation with the San Francisco office.

Mr. Brown graduated from the college of civil engineering of the University of California in 1896, and in 1898 was admitted to the Ecole des Beaux Arts in Paris, where he studied under M. Lalous, the famous French architect. He won many honors in Paris, including nine first medals, the first prize in the Godeboeuf prize competition, in 1900, and the second prize in the Rougevin competition, in 1903. He was awarded his diploma as a licensed architect by the French government in 1901, and received the Grande Medaille de la Societe des Diplomes in 1901-02.

Mr. Brown has practiced architecture in San Francisco since 1904, as a member of the firm of Bakewell & Brown. He was a member of the faculty of the school of architecture of the University of California in 1907. For a number of years he has conducted in San Francisco a successful atelier for the Society of Beaux Arts Architects. He is a member of the American Institute of Architects and a former director of the San Francisco Institute of Art, of which Mr. Bernard Maybeck is the new president.

* * *

A Question of Chimneys

Some builders and architects know but there are many who do not know that the new Building Code of New York City provides that owners who build higher than the adjoining buildings are obliged to carry up the chimneys of that structure to the height of the new building. This ordinance places no small contract upon the man who erects a twenty-story building alongside of a five-story neighbor.

When Reconstruction Comes

RECONSTRUCTION as a term got rather a bad name among us half a century ago, but it labors under no such disability in Europe. There belligerent governments are making elaborate plans for rehabilitating the industries and the districts which have suffered from war, and plans for reconstruction are the order of the day.

Reconstruction as now used in Europe comprehends preparation for a large volume of international trade quite as much as physical rebuilding and re-equipment of plants. According to statements made by officials in England, Germany has gone so far as, not only to organize new combinations among its industries and to arrange for shipping in various quarters, but also to acquire supplies of raw materials in other countries, even being detected in trying to gain control of minerals in England itself.

Thereupon England, too, bestirred itself and created a Ministry of Reconstruction. In a recent speech the new minister announced plans for the first step in demobilization of the British army, when the time comes. About 1,000,000 men will be hurried from the front, including those whose former employments are kept open for them and the men needed for railways, steamships, and restoration of manufactures.

The plans of the new minister do not stop with men, but extend to materials. Where industries have difficulty in obtaining supplies the government will step in and try to assist them.

Reconstruction in invaded districts is having attention in France. In August a French law authorized expenditure of $50,000,000 for this purpose, under an office of industrial reconstruction. For agricultural rehabilitation in the same district $60,000,000 have been appropriated. An Economic Committee has now been created and has set about taking a detailed and comprehensive census of industry for the whole country. Information about the nature of industrial equipment and supplies of materials will be gathered.

Japan, too, is busy, not exactly with reconstruction but with enlargement of its production of articles it cannot obtain in former volume under the restrictions that other belligerent countries have placed on their exports. For iron ore it has turned to the Asiatic continent. Although it had an output of 299,000 tons of pig iron in 1914, it now looks forward to 570,000 tons in 1917, and upwards of 2,000,000 tons when its new enterprises are all in operation; this will equal the present minimum requirement of the country. Since 1914 the yearly capacity of Japanese shipyards has been increased from a tonnage of 200,000 to 1,000,000 tons.

Australia has a different set of problems, and is apparently endeavoring to ascertain what industries should be encouraged by the government. For this purpose it has a National Efficiency Board, which is classifying industries according to their essential nature.

All in all, the future is receiving a lot of attention these days.—The Nation's Business.

* * *

Architect's Place in House Building

THERE are two things the prospective house builder wants. First, he wishes a living room, a dining room and a kitchen downstairs, whether he earns $10 a week or $200. In the second place, he wants his own ideas expressed in his house, even if they tend to pink cement and purple paint or cement blocks and five-foot eaves. He hires an archi-

tect and then many times does not use his ideas. The usual expression is, "It's my money I'm spending; I ought to be able to do what I want with it."

The time will come when the architect will sign his name to his finished work, even as the artist does his today. Then his client will not go to any architect with demands for wide eaves or Doric porches; he will go to one who has developed a style or styles which permit of those things, or at least one who is in sympathy with his demands. An art connoisseur tells his friends he has chosen a Rembrandt. So this man will exhibit a pride in having a certain architect.

Given a certain number of square feet of lumber, a fixed amount of stone or concrete, a fixed sum for labor, and so on down the line, a prospective builder will get a better house and a more artistic one by employing an architect than by not.

He must not hamper the architect, however, by insisting upon certain brick, or certain shingles, or certain other materials if he expects to get everything an architect has to give. The architect has spent years of schooling and apprenticeship so as to be capable of giving the correct artistic and constructive advice. It is his aim to spend time on the work, many times working out details on the job with the workmen, to imbue them with the spirit of creating something that will live, something that will add to the character of the people who will occupy the home when finished.

If, therefore, you are one of the lucky ones, who take pride in your house because a certain architect designed it, and you know it is good because of that fact, it is bound to influence your life and that of your children just as a good painting on the wall of your hall may influence those who live with it. You may not at first appreciate all of its worth or refinement, but it will grow, even as the knowledge of a good painting grows.—H. A. Sullwold, architect, in St. Paul Pioneer Press.

* * *

State Building Competition will be Nation Wide

Architects practicing anywhere in the United States are eligible to participate in the State Building competition, the program for which is ready and will be mailed to applicants by Mr. Geo. B. McDougall, architectural adviser, Forum building, Sacramento. There are to be two buildings for which $3,000,000 is available.
are available.

The jury will be composed of the Governor, the Chief Justice of the Supreme Court, the State Librarian, the Chairman of the State Board of Control, and three architects. Two of these architects will be selected by the Board of Control from a list of five architects practicing east of the Mississippi river, to be selected by the president of the American Institute of Architects; the third architect of the jury will be selected by the Board of Control from a list of four California architects, two of whom will be members of the San Francisco Chapter selected by the membership of the Chapter, and two members of the Southern California Chapter, selected by the membership of that Chapter. From the competitors in the first stage of the competition, eight will be selected to enter the second stage. Of the eight entering the second stage, one will be selected as architect for the buildings and seven will receive $2,500 each. The material required in the first stage must be in the hands of the Board of Control by June 1, 1918, and that required in the second stage by September 15, 1918. The competition is open to the architects of the United States.

Houses Made New

HOUSES built before the age of sleeping porches, sun rooms and modern electrical and plumbing equipment can be bought and made into dwellings that are more artistic and serviceable than many of the modern structures. To obtain this result, the old house must be selected with care and the remodeling ordered only after a careful study of the house.

The remodeled house is often more comfortable, charming and satisfying than one built new. Buying a house ready built is like purchasing clothes ready made; it is never quite a perfect fit; there is never perfect harmony with individual needs and requirements. Remodeling makes the old house practically new and with the added advantage that the general plan is satisfactory, it is easier to see just what modifications and improvements are needed than to see them from a study of the architect's plans.

An old house, endeared through years of occupancy and association, grows into a familiar adjustment to the needs of the family. But usually there comes a realization of the many ways in which it might be altered and improved. The growing family requires more room and changed arrangements or the taste of the owner becomes finer with the years or bettered fortune brings him face to face with the problem of remodeling. He does not care to move to a new dwelling which might prove, when tested by occupancy, less satisfying.

The two principal reasons for remodeling are the need of more space, convenience or comfort, and the natural desire to make the home more beautiful. Both requirements can be obtained by proper remodeling which may really prove an actual transformation. Remodeling gives a stamp of individuality to a dwelling as nothing else can, for it means the revising of the building, within and without, to harmonize with individual tastes and needs.

The fronts of many city houses have a characterless sameness differentiated in a long row of residences only by their numbers. In remodeling, the lines of the stoop may be changed so that a straight incline, broken by a turn, gives a new appearance. The door is to a house what the face is to the individual; by simple treatment it can smile, charm, grace and welcome. Windows, too, can be made something more than mere openings for light and air, and the whole exterior so modified by right touches that what was merely a house in the block may seem somehow to become the one house in the block.

The front stoop, the back fence, the interior of the house, its architectural features, its furnishings and its decorations, should all be considered a unit. It is this unity that will give the fine harmony essential in remodeling. The interior can be so changed, by rebuilding, by alterations, redecorating or refurnishing, to accord with the owner's taste.

Remodeling the interior of a house may be architectural or decorative or may combine both features. A rear extension may give opportunity for the making of an extra bathroom and sleeping chambers or the addition of a library, smoking room, conservatory, billiard room, breakfast room or some other room long desired but heretofore impossible. The additional space thus acquired may be diverted into increasing the size of other rooms that have proved too small for the growing needs of the family.

Decorating will bring a floor into the same key of color and make it harmonize with wall coverings and draperies, and furniture, correcting the discord that often comes into a home by the accumulating of furnishings bought at different times. True decorating unifies, simplifies and harmonizes all detail in perfect accord with one dominant note.—Noble Foster Hoggson.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

A. I. WHITNEY - - - *Manager*
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FREDERICK W. JONES - - *Editor*

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. LII. JANUARY, 1918 No. 1.

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The Present Cost of Building

The immutable God-made laws of competition always control the economic world, and no end of man-made laws ever results in more than a temporary ripple on the placid surface of things as they are. For example: Is the present cost of building prohibitive? Would it be wise upon the part of investors to defer improvement at this time with any certainty that they will, during the ensuing conditions, profit rather than lose by such deferment? A safe estimate of future conditions may always be wisely prognosticated by a careful analysis of the past; for example, vain hopes often encourage the anticipation of things unattainable, as the farmer's son said to the butcher, "Pop told me to ask forty dollars for this here heifer, but if I couldn't get forty to take thirty." Now, shall we encourage ourselves in a penny-wise, pound-foolish policy of waiting, or shall we be bold and courageous, improve our properties, post up our net income upon capital investment at six per cent net on the money, or shall we let the property remain idle at minus zero? Personally I do not feel either qualified or competent to set myself up as a prophet in this very serious question. I can do nothing more than to express my personal opinions and beliefs.

I remember the day when the honest laborer, worthy of his hire, contentedly worked and slaved industriously ten, eleven and twelve hours a day for a dollar and a quarter. I remember when, in 1891, the Mills building in San Francisco, celebrated as one of the pioneer modern office buildings of the world, and today is still one of the best, cost at that time when labor for ten hours received the average wage of a dollar and a quarter and mechanics for nine hours received the average wage of three dollars, cost 40 cents per cubic foot; in the reconstruction and addition to this same building, following the earthquake and fire which destroyed our beautiful city and during a period of apparently excessive costs and high

wages, was reconstructed with labor working eight hours per day at an average wage of $2.50 and mechanics worked eight hours a day at an average wage of $6.00; cost owing to improved methods, but 33 cents per cubic foot. Of course there are always fluctuations in local values, but I seriously believe that the big man can exact compensation from the marrow for his losses of today. It is only the small man, in the hope that he can make some gain by delay who permits valuable property to remain idle one moment. There are many notable instances, within the confines of our fair city, illustrating the point in question, to-wit: many of our vacant lots.

Doubting Thomases who desire to ignore the adage that "He who hesitates is lost," might find consolation in this note on preparedness: Would it not now be advisable for such persons to proceed with the development of any plans that might be required for prospective improvements, and by this method be prepared at a moment's notice to take advantage of any favorable market conditions that might ensue, rather than be forced to participate with hastily made and immature plans in the rush to be first on the market when the hoped for time arrives. In other words, why not have complete plans on file in a safe deposit vault along with deeds to the property? If you must be a coward be ready to follow when a brave leader gives the command—Forward, march!

Therefore, while labor worked ten hours a day thirty years ago for $1.25 and building cost was at least as high as today, I do not believe that ten years from now it would be surprising to find labor working but seven hours a day and receiving $10.00, with materials proportionate, and likewise find building costs still within economic bounds for safe investment. I do not believe that there will be more than a slight reaction, costs will steadily advance, as they have during the period under discussion; in the meantime taxes will go on forever; an idle lot is no better than an idle mechanic, an idle dollar is worse.

WILLIS POLK.

Architects' Registration Law Here and Abroad

Since the architects' registration law went into effect in New York State two years ago, only two applications have been received for registration by examination, according to the annual report of the State Board of Registration. During this period 1991 applications for registration on the basis of actual practice were received and 1367 were approved. Applications from 358 persons were denied with the recommendation that they be required to pass a satisfactory examination before being granted certificates.

Like the California registration law the New York State law does not bar engineers and others from doing building work, but it prohibits any new practitioner using the title "architect" without first having obtained a certificate to practice architecture. It is left to the public to choose between certificated architects and others to prepare plans and to supervise the construction of buildings. To attain the full measure of the benefits sought under the registration law, therefore, requires the education and enlightenment of the public upon the advantages which the owner must gain by employing a certificated architect. That the New York State board is setting a high standard for the practice of architecture is indicated by the large number of applications for certificates under the new law that have been disapproved. It remains, however, for the architects to convince the public that possession of a certificate is a guarantee of service up to that standard and that it is to the advantage of everyone employing architectural service to retain a certificated architect.

One of the greatest handicaps to the architectural profession, declares Southwest Contractor and Builder, is lack of understanding and appreciation on the part of the public of architectural service. Because the architect himself understands his profession thoroughly, he is prone to imagine that all other persons are equally familiar with it; that they know and understand just what service an archi-

tect renders and just how and why he earns and is entitled to charge a fee. As a matter of fact, the average layman knows less about the architectural profession and less about the services which an architect is supposed to render to a client, than he does about any other profession. We do not believe it is an exaggeration to say that fifty per cent of the people do not understand or appreciate the difference between the service rendered by an architect and that rendered by a contractor. It is not fair to lay the entire responsibility for this unfortunate condition of affairs on the architects, but a very large part of the responsibility rests upon them.

It is only within the last few years that anything like a systematic campaign of education has been even considered by the architects. They are just awakening to the necessity of it and some efforts are being put forth in this direction through the committees on public information created by the American Institute of Architects. But this is only a beginning and if the architectural profession is to reach and maintain the high place which it deserves in the public estimation, a great work remains to be done. It is foolish for the architect to hide his light under a bushel. No other profession does it and there are codes of ethics in other professions quite as rigorous as that adopted by the American Institute of Architects.

Fourteen States now have laws providing for the registration of architects, and while in many instances they are not entirely satisfactory, they mark an epoch in the advancement of the architectural profession and are an indication of greater progress in the future.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

San Francisco School Work

Mr. John Reid, Jr., First National Bank Building, San Francisco, will be in full charge of the new school work planned for the City of San Francisco, under the $3,500,000 bond issue recently authorized. In order to get the improvements under way at once, the Supervisors have voted to advance $50,000 to the Board of Education, the money to be used in the preparation of plans. Later on when more money is available Mr. Reid will probably name other architects to assist him in preparing the plans. The buildings that will be designed at once are a high school of commerce at Fell and Franklin streets, a high school in the North Beach district, and a grammar school at 19th Avenue in the Richmond district.

Hollywood School

Messrs. Norman F. Marsh and Herbert C. Howard, Broadway Central Building, Los Angeles, are preparing plans for a new recitation building at the Hollywood High School. It is proposed to erect a two-story brick building, 84x102 feet, to contain an assembly room, three study rooms and seven recitation rooms. It will have concrete foundation, cream pressed brick exterior, composition roof, fireproof corridors, pine trim, plumbing, wiring. The building equipment will cost $55,000.

Addition to Mills Building

The Mills Building at Montgomery and Pine Streets, San Francisco, one of the largest office structures in the bay city, will have a five-story addition which will make the annex the same height as the main building—ten stories. The Mills building was built in 1897 and reconstructed and enlarged after the fire and earthquake in 1906 by Messrs. D. H. Burnham & Company. Construction of the $200,000 addition will be in charge of Mr. J. S. Bogart, constructing engineer, and will provide 125 more offices. The building will be Class "A."

Iron Works Office Building

Plans are being prepared by Mr. John R. Miller for a four-story reinforced concrete office building for the Union Iron Works. It will be built adjoining the company's ship building plant in Alameda. About $70,000 will be expended on this improvement. This will be the second large office building to be built by the Union Iron Works in the last year or two, the other having been erected in San Francisco from plans by Mr. Frederick H. Meyer.

Union League Club Building

The members of the Union League Club of San Francisco have voted favorably upon a plan submitted by one of their members, Mr. T. Patterson Ross, to have the Parrott Estate build for them a four-story Class "A" building at the corner of Powell and Post streets. The club would probably occupy the two upper floors, the balance of the building to be rented. Mr. Ross's plans call for a steel, concrete and brick building of attractive design and costing in the neighborhood of $200,000.

Catalina Island Hotels

The Milwaukee Building Company, 517 Wright & Collander building, Los Angeles, has prepared plans and has the contract to erect two hotel buildings at Avalon, Catalina Island, for the Santa Catalina Island Co., William Banning, president. The larger building, to be known as St. Catherine Hotel, will be of fireproof construction, part three and part four stories high, and will contain 160 rooms, 100 bathrooms, dining rooms, etc. The smaller structure, to be called "The Annex," will be of frame and plaster construction, part two and part three stories in height. It will contain 140 guest rooms and 80 baths.

Class A Hotel

Mr. Richard D. King, 519 Van Nuys Building, Los Angeles, has prepared plans for a Class "A" hotel building to be erected on the west side of Spring Street adjoing the Hayward Hotel on the south. The hotel will be erected by Messrs. William and Richard Lacy and will be used as an addition to the Hayward Hotel. The new building is designed for a ten-story structure, but it is probable only four stories and basement will be constructed at present.

New Washington State Buildings.

The plans completed and approved by the State Capitol Commission of Washington for a State administration building upon the old capitol foundation, call for a reinforced concrete structure 268 feet long by 156 feet wide. It will have three stories and a basement which is entirely above ground. This new State structure is to be faced with the same kind of stone as that to be selected for the outside finish of the Temple of Justice. These two buildings form two of a group to be completed upon the erection of a new State capitol.

The Temple of Justice and the Administration building will harmonize and appear similar in size to the observer, although the two architects did not cooperate. They are practically of the same length, with a difference of but two and one-half feet in width of pavilions. The Administration will present front lines, while the Temple line is molded.

Mr. Julius Zittel of Spokane planned and will have supervision of construction on the Administration building. Mr. W. R. Wilder, of Wilder & White, New York, made the plans for completion of the Temple of Justice.

Oakland Residences

Plans have been completed by Mr. E. W. Cannon, Central Bank Building, Oakland, for a $7,000 home, with connecting garage, to be built in East Piedmont Heights.

Mr. Claude E. Barton, First Trust Building, Oakland, has awarded a contract for the construction of a $10,000 home in Crocker Highlands, Oakland, for Attorney Abe P. Leach.

Messrs. Reed & Corlett, Oakland Bank of Savings Building, Oakland, have completed plans for two $5,000 homes in Claremont.

Mr. C. W. McCall, Central Bank Building, Oakland, is at work on plans for a $10,000 home in Crocker Highlands, and a $5,000 home for a client in Alameda.

San Francisco Banker to Build

Mr. R. F. Parsons of San Francisco, who last spring purchased the Ellis place of 22 acres, two miles north of St. Helena, intends to build an attractive country home there. Mr. Parsons is one of the officers of the Savings Union Bank and Trust Company of San Francisco.

Fuller Warehouse at Portland

W. P. Fuller & Company are to have a $100,000 warehouse at Portland, Oregon. Plans for the structure are being turned out by Mr. A. E. Doyle of that city. Building will be part one and part two stories and will cover ground area, 300x380 feet.

Mr. G. A. Lansburgh Busy

Mr. G. A. Lansburgh, Gunst Building, San Francisco, recently returned from the East, where a contract was awarded by him to the Long Acre Construction Company, 185 Madison avenue, New York, for the construction of a twelve-story Class "A" office and theater building for the State Lake Theater Company, for $1,500,000. The theater is to seat 3000 persons.

Working plans are being made in the San Francisco office for a $300,000 Orpheum Theater to be built in the spring at New Orleans.

Mr. Lansburgh is also making preliminary studies for a ten-story addition and alterations to the Federal Hotel, St. Louis. The improvements will provide 400 rooms and cost $750,000.

San Jose Concrete Bridge

Plans have been completed for a reinforced concrete 150-foot span bridge to replace the one which collapsed on East Santa Clara street, San Jose. J. Walter Hunt, city engineer, is the designer. The citizens of San Jose have voted to transfer $50,000 from the outfall sewer fund to the cost of this new bridge and the money is now available.

English Country Home

Plans have been completed by Mr. Charles E. Hodges, formerly of Hodges & Mitchell, architects in the Bankers Investment building, San Francisco, for a $16,000 country home to be erected in Palo Alto for Mr. William E. Palmer, a San Francisco engineer. The house will be a fine example of pure English type, with exterior of brick, cement plaster and half timber. A red terra cotta tile roof will be used.

Pebble Beach Lodge to Be Rebuilt

Pebble Beach Lodge on the 17-Mile Drive, near Del Monte, which was destroyed by fire Christmas night, will be rebuilt, according to officials of the Pacific Improvement Company, owners of the property. The lodge was designed by Mr. Lewis P. Hobart and was admired by tourists from all parts of the world. It was constructed largely of native stone and rough timber and is said to have cost, with its furnishings, some $50,000.

Names Landscape Architect

Professor John W. Gregg, President of the Berkeley City Park Commisison and head of the department of landscape gardening at the University of California, has been appointed landscape architect in the Berkeley public schools by the Board of Education.

A Correction

The following letter has been received from Mr. Carl F. Gould, being in the nature of a correction of a personal which first apeared in Western Architect and was reprinted in The Architect and Engineer of California for December:

Editor The Architect and Engineer
of California.
Dear Sir:

There appears in your recent number under the heading, "With the Architect," an incorrect statement in regard to the Department of Architecture, University of Washington. Mr. A. Warren Gould is not head of the department, nor in no way connected with the department or the University of Washington.

Mr. Carl Frelinghausen Gould is head of the department and has been head of the department since the school was organized four years ago. Mr. Gould is a graduate of the Harvard College, A. B., a former student of the Ecole de Beaux Arts for five years; was first assistant to E. H. Bennett in the preparation of the Burnham plan for the city of San Francisco; worked in the office of Mr. McKim of New York; also George B. Post; had charge of the successful competition for the Madison State Capitol; and before coming to Seattle was in partnership under the firm name of Carpenter, Blair & Gould, 475 Fifth avenue, New York City. He has practiced architecture for eight years in this city; under the firm name of Bebb & Gould has designed the new Times building, the Puget Sound News Company building, the Home Economics and Commerce buildings, and prepared the accepted Group Plan for the University of Washington.

Mr. David J. Myers has been assistant for the department and was appointed assistant professor this year. Mr. Myers does not take the place of Mr. Harold Sexsmith. Mr. Robert McLelland of New York is now in charge of the work that Mr. Sexsmith had previous to enlistment.

Will you kindly insert the above as a correction to your first item.

Yours truly,
CARL F. GOULD.

P. S.—Fourteen of the department are now enlisted, four in Aviation and ten in the Coast Artillery and Navy.

Moss Beach Buildings

Mr. Henry A. Schulze, formerly of Brown & Schulze, architects, has prepared plans for a group of factory buildings to be erected at Moss Landing on Monterey Bay for the California Sea Products Company. This concern intends to deal quite extensively in whale meat.

Garage and Brick School

Mr. E. C. Hemmings has completed plans for a $15,000 brick garage for Mr. Hardy B. Holmes of Rio Vista. Mr. Hemmings has also finished the plans for a $40,000 school house at Rio Vista. It will be built of red rug brick and will contain six class rooms and an assembly hall.

Stockton Apartments

Mr. W. B. Thomas has prepared plans for a $16,000 two-story frame apartment house for Mr. M. Mackrell. There will be twelve apartments.

Planning New Town

Messrs. Lescher & Kibbey of Phoenix, Arizona, have secured an attractive commission in planning the new smelter town of Verde, near Jerome, Ariz., for the United Verde Extension Mining Company. The town is expected to have a population of 2000 and the construction of buildings, water, sewer and lighting systems and other improvements is estimated to cost approximately $2,000,000. All business buildings will be of Class A construction and other structures will be Class C with brick walls. It is expected that construction work on the new townsite will start early this year.

Architects to Help Beautify Highway

The New Jersey Chapter of the American Institute of Architects is giving serious consideration to the possibilities of beautifying the section of the Lincoln Highway in their State. A campaign for this purpose has been started by Hugh Roberts, secretary of the chapter. In a letter to his associates in this connection, Mr. Roberts says:

"In many places in other States a 'model mile' has been built through individual or community efforts and these have set a standard and stimulated local pride in the improvement and maintenance of the Highway. It is hoped that some of our citizens, municipalities or counties may be inducted to enjoy a number of such miles so that the people passing may see the possibilities and be induced to lend their support to making the New Jersey section of this road the best in the country."

Sacramento Architect Busy

The Sacramento office of Mr. R. A. Herold, Mr. J. E. Stanton, associate, is turning out plans for a $12,000 two-story Masonic Temple at Cortland. Contracts have recently been let in the same office for a $13,000 hollow tile residence for Mr. D. A. Cannon of the Cannon-Phillips Company. Mr. Cannon recently made the trip to Honolulu and is delighted with the Island and its attractive climate.

Addition to Athletic Building

Plans are to be prepared by Messrs. Bliss & Faville, Balboa Building, San Francisco, for a two-story addition to the Woman's Athletic Club Building on Sutter street. The building was completed less than a year ago, and although five stories and basement, it has proved to be too small for the growing membership of the club.

Country Club Building

Mr. Charles A. Haber, Monadnock Building, San Francisco, has completed plans for a two-story reinforced concrete club building, to be erected on Market street, between Fifteenth and Sixteenth streets, San Francisco, for the Wesley Society. Building will cost approximately $22,000.

The Mullgardt Issue

Of the many congratulatory letters which The Architect and Engineer received for its December number, the following are examples:

December 26, 1917.

Mr. F. W. Jones, Editor The Architect and Engineer, San Francisco, Cal.

Dear Sir: Would it be possible for us to borrow a couple of the cuts of the Mullgardt designs for the buildings at Honolulu, published in your December issue? The cuts on pages 57 and 59, for example. They are extremely interesting. If possible we would like to use them in our next issue, giving you proper credit. An early reply will be appreciated.

Your Mullgardt number is the best, from our point of view, that you have ever issued. Mullgardt has been called a dreamer; but he possesses the thing which every great artist must have—an imagination with a soul.

Please accept our wishes for prosperous new year.

Very truly yours,
SOUTHWEST BUILDER AND CONTRACTOR.
By W. E. Prince, Editor.

Most Attractive Issue

The Architect and Engineer of California,
627 Foxcroft Bldg., San Francisco, Cal.

Paul Weaver Penland, Hotel Bayard, 11 Rue Richer, Paris, France, a graduate of the Department of Architecture of the University of California, has completed his service for the French Government in the ambulance corps and he is now entering the aviation corps with some other U. S. men.

I know that he would appreciate a copy of your very delightful December issue. Don't you want to send it to him? I think that this is one of the most attractive issues of your magazine that has been published.

Cordially,
OSWALD SPEIR.

Los Angeles, Dec. 26, '17.

Appreciation

Seattle, Wash., December 27, 1917.

The Architect and Engineer,
San Francisco, Cal.

Gentlemen: We enclose herewith our check for the sum of $1.50, being payment for A. D. 1918 subscription to your magazine.

We wish to commend you for the excellence of recent numbers.

Wishing you the compliments of the season and increased success and prosperity for the coming year, we are,

Very respectfully yours,
BEEZER BROS., Architects.

A Word of Praise From Mr. Cass Gilbert

244 Madison avenue, New York,
December 29, 1917.

Dear Mullgardt:

I have seen with much pleasure, the illustrations of your recent work as shown in The Architect and Engineer of California.

I offer my hearty congratulations. You have a point of view and a way of expressing it that is all your own and your art has great beauty and vitality. Permit me to offer my hearty felicitations.

May I ask you to give my kindest regards to Mrs. Mullgardt, and with best wishes for the New Year, I remain,

Sincerely yours,
CASS GILBERT.

To my friend
Louis C. Mullgardt

Very Striking Architecture

The Architect and Engineer of California,
San Francisco, Cal.

Gentlemen: I wish to compliment you on the excellency of your December number. The illustrations of the recent work of Mr. Louis Christian Mullgardt, F. A. I. A., impress upon you the versatility as well as the cleverness of this gifted gentleman.

Fortunately, I am familiar with the architecture of the buildings in San Francisco, and the suggestions really take away entirely the identity of past year's construction. The buildings planned for Hawaii are very striking and the arrangement of awnings is not only unique but necessary.

I trust the Architect and Engineer will enjoy a very prosperous and happy New Year.

Yours very truly,
PITTSBURG WATER HEATER CO.,
F. H. Knapp, Gen. Mgr.

A Home Built While You Wait

(Oakland Tribune.)

Henry Eissler, contractor and builder, is making a reputation for himself as a "speed boy" that any builder anywhere in California might envy. Six weeks ago he took a contract from C. Cohn to build twenty-four modern five-room cottages covering two blocks between Twenty-eighth and Thirtieth streets on Chester avenue and K street. He says that he will have the roofs on every one of them this week.

So capably has Eissler rushed the work that one of the cottages is already occupied, and he expects that another will be occupied by Saturday. He declared that he expected to have every one of the twenty-four cottages ready for occupancy by January 1, 1918.

City Hall Falling to Pieces

Because of alleged faulty structural design, the city hall at Tucson, Ariz., erected in 1916 at a cost of $50,000, is in a sad state of deterioration, according to the mayor of Tucson. The roof and the upper floors are sagging, it is claimed, the supporting beams not being heavy enough to carry the weight imposed. The mayor wants "a thorough diagnosis and the opinion of an expert architect" as to what should be done to restore the building.

New Library for Los Angeles

Mr. Myron Hunt, Hibernian Building, Los Angeles, has been commissioned to prepare plans for a library building in the Southern city to house the extensive library of Mr. Henry E. Huntington.

Bank Building for Taft

Mr. Thomas B. Wiseman, of Bakersfield, is preparing plans for a one-story brick bank building, 30 x 65 feet, for the Security Trust Company of Taft, Kern county. It will cost $10,000.

City Planner Dead

Charles Mulford Robinson, widely known in England and America as a city planning expert, died at his home in Rochester, N. Y., December 30, of pneumonia. Mr. Robinson was employed by the city council of Los Angeles a number of years ago to investigate and report on a plan for the future development of Los Angeles. The first university chair of city planning, established by the University of Illinois, was held by Mr. Robinson.

Architectural Exhibit

The Architectural League of New York will hold its annual exhibition of architecture, sculpture, decorative and landscape design in the Fine Arts Building, 214 West Fifty-seventh street, from February 3 to February 23, inclusive. This is practically the most important showing of architectural and allied arts made in this country. The League always has various competitions in hand which serve to stimulate interest.

Personal

Mr. W. H. Toepke has moved from the Maskey building, which he designed soon after the fire to offices in the Garfield building, 942 Market street.

Octavius Morgan, Jr., who has been visiting in Mexico for the past year, has returned to Los Angeles and resumed his architectural work with the firm of Morgan, Walls & Morgan, of which he is a member.

Concrete and Brick Warehouse.

Messrs. Sutton & Whitney, Lewis Building, Portland, are completing plans for a concrete and brick warehouse, 100 feet square, to cost $100,000, and to be erected on the northeast corner of Front and Morrison streets, Portland, for the A. Meier Estate.

Oakland Warehouse and Factory

Mr. Wm. Knowles, Hearst Building, San Francisco, is preparing plans for a warehouse and factory to be erected in Oakland under his personal supervision by day labor.

Architect Mooser Has Much Work

Mr. Wm. Mooser, Nevada Bank Building, San Francisco, states that he has plans on the boards in his office for new work in Stockton, Sonora and Grass Valley.

$50,000 Concrete Hospital

Mr. Jno. J. Foley of San Francisco has completed plans for a $50,000 four-story, reinforced concrete hospital to be erected at Clinton Park and Guerrero street, San Francisco, for the Mary's Help Hospital.

Architect Loses Fee on Cost Limit

Architects who submit plans for buildings on which a maximum cost has been set cannot collect their fees even though their plans were accepted, if a contract cannot be let within the price, according to a decision of the presiding judge of the Superior Court of Kern county. Mr. Edward T. Foulkes, a San Francisco architect, formerly Oliver & Foulkes, sued the First Congregational Church of Bakersfield, and its pastor, the Rev. E. R. Fuller, to collect $900 alleged to be due him for services under a contract which he had with the church to furnish them plans for a building to cost not more than $30,000. Plans were furnished and accepted by the church and bids were taken, but all proposals for the erection of the building were in excess of the maximum price.

After a delay of more than two years the church rejected Foulkes' plans and he brought suit to collect under his contract. It was held by the court that the architect's claim was barred by the statute of limitations, but aside from that there was no cause for action because the church had not been able to secure a contractor to erect the building for the maximum price.

Commenting upon the decision, Southwest Builder & Contractor says:

"In this decision the Kern county court is simply following the precedents established by court rulings in similar cases in this and other States. When a maximum cost is set on a building in an agreement between an architect or owner, whether the agreement be verbal or written, the architect jeopardizes his commission unless he secures a bona fide bid for the structure within the cost limit. Approval or acceptance of the plans by the owner in advance of taking bids would not absolve the architect from his duty to fulfill all the terms of his contract.

"As a matter of fact, it is not good professional policy for an architect to guarantee the cost of a building, especially in these days of soaring prices and uncertainty in wage schedules."

Changes Meeting Night

Richard J. Culver, attorney of Los Angeles, delivered an address on the subject of "Liability Insurance and Bonds" at the January meeting of the Southern California Chapter of the American Institute of Architects. The time for the Chapter meetings has been changed to the second Wednesday of each month.

A number of important questions were considered at the meeting, one of which was the advisability of holding an Institute convention in Washington, D. C., the latter part of the month.

Electrical Department

The Home Electrical

By CLOTILDE GRUNSKY in Journal of Electricity.

THE great difficulty in selling electrical appliances is that the homes of the purchasers are not fitted up to receive them. The electric toaster which was received for a Christmas present is never used because the cord was so unsightly at the breakfast table—and it was such a nuisance to have to unscrew a bulb each time. So naturally enough the electric percolator is never bought and the electric chafing dish which looks so attractive is decided to be more nuisance than it is worth.

To the fact that the people have not learned to use electrical conveniences is blamed the inadequacy of house wiring and the sparseness of base plugs and special conveniences—with much greater propriety the charge might be reversed. To buy an electric vacuum cleaner for a home supplied only with gas would be like purchasing a buggy when you had no horse—to buy one when the house is incompletely wired and the machine can be used only at an inconvenience is very little better.

The opportunity of visiting a home in which every convenience of base plug and special fixture, of switch board and bracket has been worked out, would prove a revelation to any prospective owner of a "house electrical"—it should prove a revelation to a contractor-dealer as well. For here he learns how he can best fit out a home so that a customer will profit to the greatest extent by the use of the electrical conveniences he has to sell. He can learn what suggestion to offer with the purchase for its better use, that the satisfied purchaser may return again. Such a home is that of Mr. D. E. Harris of the Pacific States Electric Company, located on 17th Avenue, San Francisco.

An idea of the care with which the details of wiring have been planned can be obtained from the fact that in this eight-room house there are 14 base plugs and 31 switches.

The parlor is planned with special attention to the fixtures. Center bowl, side brackets and table reading lamp are all arranged with separate switches, so that the light may be varied at will to obtain a general illumination, or a concentration of the light where desired. The toning of the colors is a particular feature, the bowl and the side lights shading from amber to cream and blending both in color and design with rug and wall paper. An ingenious arrangement here utilizes the porch light to illuminate the stained glass landscape over the piano, the window shining out with a soft radiance when the room is in semi-darkness.

The dining room is in silver grays and blues, the oxidized silver fixtures again toning in with the colors. A center fixture and side brackets provide a soft even light, adequate but unglaring. A special convenience is that of the base plug at the serving table which permits of the use of appliances there, wholly distinct from the center table. The dining table itself is provided with a floor plug, so arranged that it is quite flush with the floor and permits of the use of the room for dancing without inconvenience.

The breakfast room, however, is more thoroughly wired. It is not necessary here to clear the room in the same way as in the dining room—and a very ingenious scheme has been worked out. The table itself is wired and provided with three plugs on its under side, which make it possible to use toaster, chafing dish and percolator simultaneously. The whole arrangement is distinct from the lighting system and it is quite unnecessary to unscrew bulbs or scrape one's fingers on the shade in tightening the connection. The cords are entirely inconspicuous—and for the first time the electrical table cooking devices have become a convenience and not merely a rather entertaining plaything.

An artistic arrangement of glass sliding doors makes it possible to obtain a vista of the house, thus getting the full effect of the lighting scheme.

The special feature of the kitchen is the ironing board and iron. A small cupboard in the wall proves to be a concealed ironing board when unfolded. Above it is a shelf for the iron and stand. Immediately alongside of the board is the plug—not a screw socket but a plug which can be handled by a simple insertion. The Bryant switch is used here, the current being turned by a simple push button which lights at the same time a small pilot light. It is thus im-

possible to leave your iron on unwittingly—and quite unnecessary to feel of its surface at intervals with wet finger to see if you have pressed the correct button. An electric range is soon to be installed, thus completing the kitchen outfit.

The ground floor is fitted up as a den, with lights adjacent to tables where they are needed and conveniently situated in store closets. Here as elsewhere throughout the house, a special socket is provided for the vacuum cleaner.

A back room houses the Thor washing machine. This is conveniently arranged between a shelf on one side on which a basket can be placed and the tubs on the other. The clothes are put to soak on Sunday night, and placed in the washer before breakfast Monday morning. Attachments of hot and cold water make it possible to regulate the temperature of the water used—and the machine is set in motion. By the time breakfast is over the clothes are washed—and the only duty remaining is to lift the pieces one by one to the electric wringer which is now turned on. This conveys the clothes to the rinse water, a new set is started in the washer, the lid closed and the articles again put through the wringer, now reversed, from the rinsewater to the waiting basket. With the appliances thus conveniently and compactly arranged, it is possible for a child to handle them.

The upstairs floor is again a model of convenience. Brackets at the bureaus, center fixtures with separate switches, bedside reading lamps entirely distinct from the other lighting system, desk lamps and specially designed fixtures carry out the carefully planned scheme. A special portable fixture by the bedside is arranged somewhat on the order of an invalid's table, making it possible to swing the light over the bed to any point desired. Base plugs alongside the bed permit the use of bed pads or other conveniences for heating hot water, etc.—without the use of overhead fixture.

The bathroom has a center light which illuminates the room brightly and evenly without shadows. A special base plug here makes it possible to use an electric heater when desired.

Everywhere appliances and wiring schemes combine for beauty and convenience. There is no sense of cords or fixtures—merely of general well being and the acme of modern comfort.

Not one of these devices is strictly new, but the application has been studied out until it nears the point of perfection. And after all, it is the success of the ultimate installation rather than the mere appliance as demonstrated in a store which the purchaser is buying—it is that which the dealer must sell. The difference between electrical appliances as so used and the awkward fittings of the usual home is so marked that no one who has ever seen the example could fail to appreciate the value of ingenuity of wiring as a selling argument. The purchaser is not going to know these things for himself—he must be told them—and it becomes the duty of the contractor-dealer to know how to do it himself and to spread that information to his own great good.

Silhouette Highway Lighting

By S. J. LISBERGER

Usually speaking, under California conditions, our counties and our cities have very little money to spend on lighting. In doing highway work, therefore, the electrical man must face the fact that the county or the consumer is unable to light the highway as he would like to have it lighted and as you would like to light it for him. And therefore you must be very careful in endeavoring to plan your lighting system to see that you do not light the highway uniformly. Uniform lighting, unless it is of high intensity, is a flat failure. So long as the financial conditions are such that plenty of light is not available you must resort to what we term "silhouette" lighting—that is, the placing of a light on a highway in such manner that objects can be distinguished in silhouette, not by so-called direct illumination. That al-

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lows you to use a unit of reasonable intensity, reasonable spacings, and gives a fairly good result.

In one community we had certain districts down along the peninsula highway, starting out from the San Francisco city limits and coming down the highway, where in the past they had used 32 candle power lamps. Now the illumination from 32 candle power lamps spaced as they were, practically on every pole, was very, very poor. Really the economical unit on street lighting systems is practically a 250 candle power unit. That is, in other words, it practically does not pay to put in much less than that, because your pole, your wire, your fixture, which are the main constants going to make up your lighting charge, are irrespective of the size of lamp which you put in the unit, or in the fixture, and the only thing that varies is the amount of power, the extra cost of the renewal of the unit itself.

By using 250 candle power lamps with refractors spaced on every pole, we demonstrated what effective silhouette lighting would do, switching on the old and new systems alternately to give the contrast. They not only changed every light along the highway, but their bills were reduced. Silhouette lighting does not look good in your machine if the other fellow has a headlight on, but is extremely effective with headlights turned off.—Journal of Electricity.

Building Operations and Material

ONE of the intensely interesting phases of the recently noticeable resumption of building activities throughout the metropolitan district and its adjacent territory is the largely increased number of apartment houses and small dwellings already started or for which plans have been prepared. For many months this city has suffered from the difficulty of properly housing seekers for modern living accommodations. It has been generally conceded that the housing facilities, both within the city bounds and suburban communities likewise, were inadequate; that the demand for rentable quarters in decent surroundings and at moderate rentals was infinitely greater than the supply. Real estate agents experienced this condition to a marked degree during the active renting season prior to October 1, and as a result they had to disappoint many prospective clients. At present it would seem as though investors and speculative builders are commencing to realize the condition of the renting situation, and are inclined to make a start toward relieving matters by the erection of additional buildings. The number of plans in progress in the offices of architects for high-class multi-family houses indicates the commencement of a revival of speculative and investment building, more particularly of those structures for which there is such an intense demand. It appears as though the speculative interests have at last been brought to a realization of their great opportunity to do constructive work that furthermore will provide an excellent return upon the money invested. There are a number of factors that have undoubtedly been instrumental in starting this speculative movement, aside from the demand for space that was acknowledged by all realty interests as well as the seekers for accommodations. The substantial reductions in the basic prices of certain materials essential to building construction through the medium of Government regulation and control, the general stabilization of the material market in all of its branches and the increased rentals now to be obtained for space, have unquestionably been of immense influence in leading the speculative builder and investor to again come into the market for buildings of this character. The resumption of speculative construction is a welcome sign of better times in store for the allied building interests. It is sincerely to be hoped that the work now started will prove itself to be the commencement of a structural endeavor that will not be permitted to cease until there is a sufficient supply of living accommodations to fill all current demands. New York City is today underbuilt along certain definite lines, and the principal one is the provision for housing the rapidly growing population. This applies with equal force to suburban districts, within reasonable commuting distance of this city, and its immense commercial interests, where a similar demand exists. It will require a large volume of new construction, involving the erection of many apartment houses and one and two family dwellings, to supply the demand, and it will be a long time before the city is built up to its housing capacity.—The New York Record and Guide.

Hardware Firms Consolidate

Baker & Hamilton and the Pacific Hardware & Steel Company, two of the oldest and largest firms in San Francisco and on the Pacific Coast, have consolidated. By this means the new firm becomes one of the largest in the United States in the special field for steel and hardware articles. This consolidation is the sequel to the large purchase made by Herbert and Mortimer Fleishhacker and their associates for $700,000 of the controlling block of stock in the Pacific Hardware & Steel Company.

Heating and Ventilating

Ventilation of Army Barracks

By W. J. MAUER, Engineer, Chicago Commission on Ventilation.

VENTILATION is a definite problem, although varying under different conditions, and each case has its definite solution. The haphazard method of opening a window here and there is not the solution. The proper arrangement of supply and exhaust; the proper allowance of window space for air space; window height for room height; space for occupant, and air distribution and velocity is as definite a problem for the heating and ventilating engineer as the proper proportioning of flange areas and web area in a plate girder is to the structural engineer, or intensity of light, size of opening, and time of exposure is to the photographer.

That some of the vital points on proper housing have in the past been overlooked in the design of barracks is evident from the number of cases of disease that existed in camps.

Young men from all walks of life are now concentrating at various training points and as many as 200 are being housed in the same building. If any one of these has measles, mumps, meningitis, pneumonia or other diseases, the entire number in that building may be exposed to the infection, and this is especially dangerous when the air supply is inadequate and other points of sanitation are disregarded.

In a recent article by Mr. Frederic J. Haskin, special correspondent for the Chicago Daily News, the conditions of the French army in the present war were given. He states that France has discharged 200,000 soldiers on account of tuberculosis since the beginning of the war, and that the spread of the disease in the British army has reached such alarming proportions that the civilian population has organized to combat the situation. This comes at a time when France is making a struggle for existence. The fault is not with the French army but with the French people, and when I say this I mean the French medical and engineering societies. "Before the war the death rate from tuberculosis was nearly three per thousand of population, in the cities the percentage running much higher." The cause was found by the Americans in France who formed a committee for investigation. It was given as "lack of fresh air." The French are far advanced in the science of anaesthesia and surgery, but backward in sanitary matters. The committee proceeded to educate the public on the value of fresh air and now "windows are being sawed in hundreds of peasants' homes which boasted of none before the war. The propaganda of fresh air and sanitation is having its effect."

"Nothing has proved more discouraging to the fighting forces in Europe than the verdict of the army physician—'wounded with tuberculosis'—a verdict which should be to Americans both a call for help and a cry of warning."

The science of warfare from a standpoint of destruction of life and property has progressed to a most terrible degree in the present war. The medical profession, too, has made wonderful progress, but the biggest discovery that the medical profession ever made is that

* From a paper read before the Engineering Section of the American Public Health Association, in Washington, D. C., October 18, 1917.

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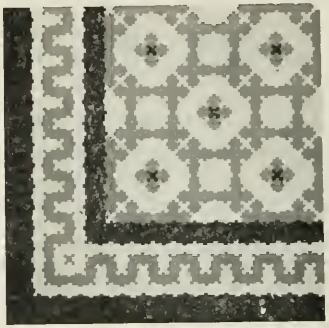

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Longmore's and other tables show that in the wars of the past two hundred years, which were for a prolonged period, 20 per cent of the total deaths were from bullets and 80 per cent from disease, and comparing this with our Spanish-American war, 7 per cent of deaths were from bullets and 93 per cent from disease.

Feeble attempts have been made to establish standards for armies of various countries. The cubic feet of space allowed per soldier in barracks has varied from time to time, and in various countries, but the general tendency has been to increase the space:

French infantry .....421 cu. ft. per soldier
French cavalry.....491 cu. ft. per soldier
Prussian army .....631 cu. ft. per soldier

The English government found by Royal Commission that 600 cu. ft. was sufficient, provided "local position of barracks be open and airy; the structure of the building simple and admitting free external air and internal movement of atmosphere, and provided the barrack rooms as well as all internal parts of the building are duly ventilated." This shows that the subject has been given some thought, but what engineer would specify "admitting free external air, allow internal movement of air and the building shall be duly ventilated"? This, however, has been made a part of the regulations of the English army. An inspector must inspect monthly, examining the ventilation, heating, light, latrines, closets and all other parts. Besides this, the regiment details a certain number of men to give these points a daily inspection.

Shall the men in our army barracks be subjected to extreme changes in temperature and thus become physically hardened?

At first glance it would seem that to prepare an army for war the proper procedure would be to break away from our artificial manner of living and expose our men to heat and cold alike and pick the survivors as those best fit to serve us at the front; in fact, it has been stated there should be no heat supplied to barracks and that the exposure will harden the men and make them more fit for service.

A statement like this is fundamentally wrong and coming, although unofficially, from men in the army it should immediately be argued down. The first tendency for men in a cold room is to close the windows and fill up all openings with papers and rags and thus prevent the free entrance of fresh air and the exhaust of foul. The next inclination is for the men to huddle in one corner of the room and keep warm by an interchange of body heat. The results on

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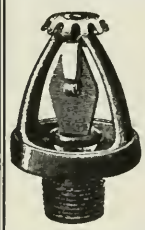

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health from this kind of housing are too well known to be discussed at this time.

It might be possible to give orders against the closing of windows and against the crowding of men into corners of the room, as mentioned above, and let us assume that these orders can be followed out to the letter, the following will be the result:

Air that is too cold causes lack of activity, requires more food, causes a lowered vitality, breeds discontent, and the army will show loss of energy and enthusiasm. The argument of "survival of the fittest" is wrong today—the tendency is to conserve and build up.

It is against all good argument and reasoning to house a man in a room with a temperature lower than 10 degrees F. above the freezing point of water. A German authority on army camps gives 12 degrees C. or 53½ degrees F. as a minimum.

The best system would be steam heat from a central plant and cast-iron wall radiators in the barracks. The temperature should not be too constant, to prevent monotony, and a variation from 45 to 55 degrees F. would be invigorating and conducive to physical activity.

The barracks that are heated by stoves will be subject to considerable drafts. The heat of a stove is local; those being close by will be too warm, while those further away will be too cold. A stove requires constant attention and is the source of considerable dust and dirt, not to mention the danger of fire in the building.

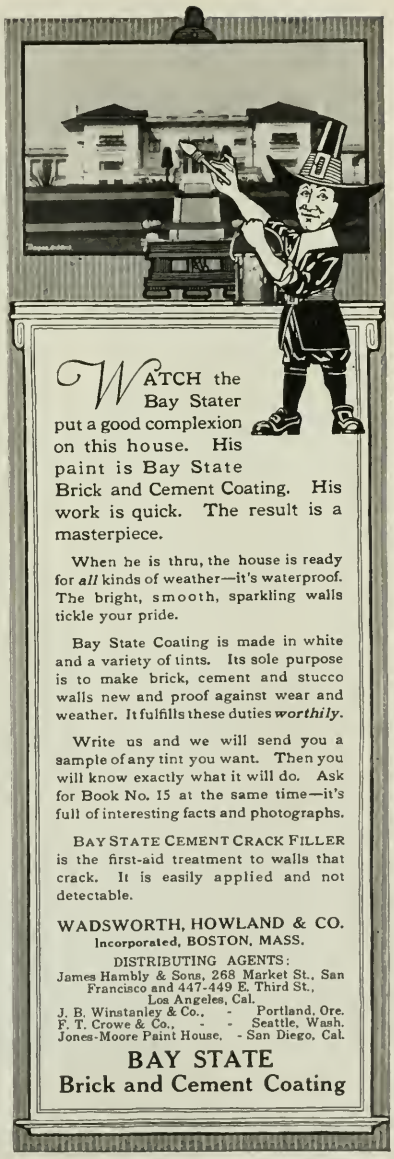
The barracks that are being built by our Government for the care of men enlisted in the Officers' Reserve Training Camps are as follows:

There are four buildings required to house one company, two buildings being used for sleeping quarters, one as mess hall and one for wash rooms, shower room and toilets.

We are chiefly interested in the sleeping quarters or barracks proper. This building is of wood construction, 125 feet long and 20 feet wide. One end is used for office purposes and for officers' quarters and is separated from the remainder of the building by a wood partition extending to the roof. The main portion of the room is used by 80 men and is 111 feet long.

The roof is quarter pitch, built of ⅞-inch material and covered with roofing felt saturated with asphalt. The sides are ⅞-inch material with batten strips on the outside. The sides are brought within 3 inches of the roof and this space is open, allowing the free admission of air. This space, as well as the doors and windows, are screened.

The windows are 2 feet 9 inches wide by 2 feet 11 inches high and there are 28 in the main floor, 13 on each side and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2 at one end. These windows slide horizontally and can be opened their full area.

There are six doors in the main room, three on each side. Each door is 32 inches wide by 6 feet 8 inches high.

The barracks are lighted by electricity with 60-watt lamps, 10 feet centers, located on the rafters and along the center line of the building.

There are four openings in the roof with metal stacks for stove heaters, three being in the main room and one in the office quarters.

The buildings are of open construction and as they now stand would be very unsatisfactory during severe winter weather. This, however, can easily be overcome by lining with wallboard or similar material and allowing an air space between it and the outer wall. The space at the eaves would need to be nailed tight or provision made for opening and closing at will in cold weather.

The cots are arranged along the wall, transversely to the room, with the head end about 6 inches from the side wall. The windows are 42 inches above the floor and at this height is a 12-inch shelf against the wall. This shelf is used for books and other personal belongings and serves as a shield for the sleeper's head from the direct draft of the window.

As there are 80 men in the main room, each man has an allowance of 260 cu. ft. of air space, 28 sq. ft. of floor area and 2.8 sq. ft. of window area. Based on the experience of tests made in other buildings it is predicted that the CO_2 will run as high as 12 parts per 10,000.

There is no provision for wardrobe, and a rafter on alternate roof trusses makes a convenient place for the men to hang their clothing. The dust will run high and if the clothing is damp there will be considerable odors. But the dangerous feature of this practice is the possibility for the spread of disease germs.

The cots are too close together. They are the standard army canvas top cots, being 6 feet 6 inches long, 27 inches wide and about 14 inches from the floor. They are arranged in pairs, 17 inches between pairs, which gives 6 feet centers of pairs.

At each entrance is a shoe scraper about 30 inches long and 20 inches wide, built of 2-inch by ¾-inch wood strips set vertically with ¾-inch space between them. This scraper also serves as a door step. It is an excellent device for cleaning the shoes before entering the barracks and helps considerably to keep down the dust.

The plans for the barracks for the army of drafted men are somewhat different from the barracks just described. They are two stories high with sleeping quarters for 200 men and each containing its own kitchen and mess room, while the toilets are in separate buildings. The plans have now been changed to house 150 men in these buildings.

Lockers are provided in the sleeping quarters and located in the center of the room so as to divide the room into two parts. On the first floor, space is provided for four stoves. The smoke pipe of each stove is provided with a drum on the second floor.

The heating system has lately been changed from stove heat to steam heat. This is a very important change, the advantage of steam over stove heating having apparently been recognized.

In Dr. John S. Billings' report dated 1868 the following was read with a great deal of interest: "Dr. Craig's test for air conditions in a barracks is simple and practical," and it is described as follows: "Go into the room about 3 a. m. after fifteen minutes' walk in the fresh air. If no musty, unpleasant odor is perceived under such circumstances, the ventilation is probably satisfactory."

Government Administrator Advocates Thermostats for Fuel Economy

Dr. H. A. Garfield, the Government fuel administrator, says that it is the duty of every American to save coal this winter. He advocates the use of thermostats as one means for preventing over-heating and its accompanying waste of fuel.

In a statement sent out to the press, Dr. Garfield says:

"It is the duty of every American to save coal this winter. If every family will save a ton of coal, if every industrial plant will save 10 per cent of the coal it uses, which 10 per cent it now wastes, the coal problem will be largely solved."

Several channels of heat waste common in American homes are pointed out by the State Board of Health. One is the chimney, through which an enormous amount of heat is wasted. Windows and loosely constructed roofs provide other means of loss. At a time like this, when fuel is scarce and the Government needs all the coal it can get for war work, all such leakages should be stopped as much as possible.

From a health standpoint the use of less coal has an important bearing. Overheating of homes, offices and other buildings is the rule rather than the exception. A reduced temperature will save coal and be less injurious to the human body.

Thermostats, which automatically turn on and shut off the heat as required, even while the dwellers sleep, are one means for preventing overheating and saving coal. Intelligent handling of the heating plant, however, is the most important requirement in the task of conserving the coal supply in the American home.

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The Contractor

Why Some Contractors Fail to Make Money

FROM time to time there is extended discussion of why contractors fail to make money. One sees discussions of the subject bearing on almost all phases of the matter, but rarely is there any question as to the competency of the men who hold the contracts. And, indeed, this is not a surprising thing, for contracting is an honorable and an honored business, and many who engage in it are among the leading men of the day.

On the other hand, many small undertakings, especially in the line of public works, fall into the hands of men who are not possessed of great experience, and who, no matter how well they intend to do, are nevertheless handicapped by this lack of experience. An example of this kind is cited by a writer in Engineering and Contracting, who has had occasion to visit small undertakings and has had opportunity to observe the wonderfully low efficiency in handling men which many small jobs show, and it has often been a question in his mind as to whether the ordinary foreman knows how to find out even the most elemental facts as to how steadily his men are working.

One very good way to do this is to find a place where one can watch a force of men at work without being too closely observed and then count the idle men, the count being repeated every minute over a period of fifteen or twenty minutes and repeated two or three times a day. Thus on a job in Iowa the following record was recently made:

On the job: One foreman, one inspector, eight laborers, in sight. (There were two or three others on the job who could not be seen from the point where the counts were made.)

Count	Men idle.	Men at work.
2.31	4	4
2.32	4	4
2.33	6	2
2.34	3	5
2.35	8	0
2.36	5	3
2.37	6	2
2.38	4	4
2.39	3	5
2.40	2	6
2.41	5	3
2.42	7	1
2.43	7	1
2.44	4	4
2.45	6	2
	74	46

Average at work, 3+.
Average idle, 5.

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The unescapable impression which this simple count gives is that more than half of the time of the men employed on this job was being lost. If to this one adds the time of the foreman, who in this case did nothing but "boss the job," the condition of affairs seems even worse.

There is nothing new or original in this simple count to determine the elementary question as to how much positively wasted time there is on a job, but if more contractors would adopt it there would be more of an effort to save labor by arrangements of the force which would eliminate the lost labor.

On the job in question a mixer was running at full speed during the whole period of the count. It had been running for some hours before the count was taken and ran on after the count was made. Three of the eight men fed sand and gravel to the mixer. The sand and gravel were not separate, but were mixed together, the aggregate being a run of pit material used without screening. One of these men was always idle. Two should have fed the mixer with ease, even though it seemed that the aggregate had been unloaded farther from the mixer than was necessary or advisable.

One man brought cement to the mixer. He was a dead expense, and idle over half of the time. The cement could just as well have been unloaded on a platform where the man who tended to the mixer could have gotten at it without assistance.

Another man pumped water for the mixer. A small power pump connected to the mixer engine should have handled this work. This man was idle two-thirds of the time.

The man to tend the mixer was needed, but the man who dumped the mix and shoved it down a trough set at a light slope when it should have been set steep enough to permit the concrete to run or, better still, when the mixer should, as in this case, have dumped direct into the forms, was a dead loss.

The man who tamped the concrete in the forms was needed, but he should have also tended to dumping the batches as they were mixed. Thus careful management would have cut this force of eight men to four men, and it is not asserting too much to say that none of the four would have been overworked.

Inquiry was made as to the financial side of this job. It had lost money. No wonder! Using two men to do one man's work is seldom profitable.

Trade Note

Hill, Hubbell & Company, a recently formed copartnership, selling agents for bitumen products for the protection of iron and steel, have opened offices at 704 Fife Building, San Francisco.

Contractors Should Pay Help in Currency

The following statement has been made by Secretary McAdoo and is of particular interest to the Pacific Coast where large quantities of gold are used for pay roll purposes:

The use of gold coin as a circulating medium leads to rapid abrasion and consequent loss of value. There is a real economy in using currency in all ordinary domestic transactions, letting coined gold be used as security behind gold certificates and as reserve for Federal reserve notes and other forms of paper currency or for foreign exchange settlements in cases where nothing else can be used in adjusting international balances.

There are some firms and corporations, however, in various sections of the country which have been accustomed, in making up their pay rolls, to use machines for counting money. While there is no objection to the use of these machines in handling silver coins, the use of gold in them in times like the present must be discouraged.

In most cases firms and corporations which have been using gold in these machines have discontinued the practice, realizing the importance of protecting the country's gold supply and of discouraging the wasteful use of gold for pay rolls, especially as in most cases the recipient of the gold coin would prefer paper money. In some cases, however, paymasters have seen fit to consult their own convenience and continue to make demands upon the banks for gold coin for pay roll purposes. The banks, realizing the waste incident to the use of gold for such purposes, have objected to meeting the demands of the paymasters, but in some instances have been threatened with the loss of the account in case of their failure to comply, statement being made that other banks in the community would be willing to furnish the gold in consideration of the transfer of the account. It is hoped, however, that upon reflection firms and corporations which are still using gold and banks which signify their willingness to furnish it will realize that this is a selfish and unpatriotic attitude, and that for the sake of the good of the country in these serious times they will subordinate consideration of personal convenience or of profit to the general welfare and be content to make up their pay rolls in currency, using silver coins, of course, for fractional payments.

Oakland Apartment House

Plans have been prepared by Mr. George McCrea, of Oakland, for a $40,000 apartment house to be built by Mr. Chas. W. Heyer, for a client.

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Paraffine Company, Inc., to Have Linoleum Exhibit

The Paraffine Paint Company has been reincorporated as the Paraffine Company on account of the additional materials which the company now manufactures, including damp proofing, roofing felt and cork linoleum.

The company, whose general offices are at 34 First Street, San Francisco, has just taken space in the San Francisco Furniture Exchange to display its newest product, Pabco Linoleum (felt base). The company has completed at a cost of $350,000 a new plant at Emeryville—the only one in the United States, by the way, that will make the base as well as all the materials that enter into the making of felt base linoleum.

Selecting Plumbing Fixtures of Quality

Architects find it a pleasure, as well as a great help to them, to visit a well-equipped and attractive show room where they may select with little or no effort building material as may be required. Such is the new show room for the display of plumbing fixtures of Holbrook, Merrill & Stetson at 64 Sutter street, San Francisco; the architect has everything in the plumbing fixture line at hand. Sanitary fixtures of modern designs are attractively shown and those interested should experience no difficulty in making selections to meet every requirement. Many of the fixtures are displayed with water connected to illustrate actual working conditions. Several well-designed bathrooms, fully equipped, afford an opportunity to study arrangement.

"An exhibit of this character, so centrally located, should be a great help to architects, builders and others interested in the selection of plumbing goods of quality," said Mr. Eastwood, uptown manager. "We have a corps of experts on hand at all times, and it is a pleasure to them to lend their assistance and give advice to visitors. The firm of Holbrook, Merrill & Stetson has received much commendation for its enterprise in placing at the disposal of the public an exhibit of this character

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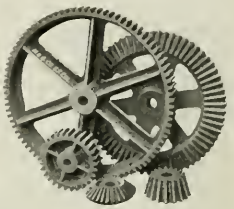

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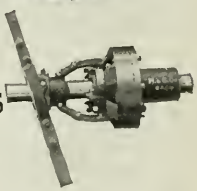

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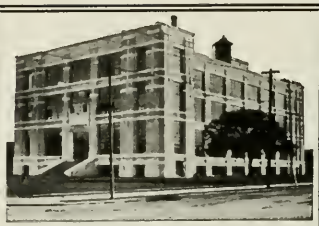

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Book Reviews

City Planning for Bridgeport

"BETTER CITY PLANNING FOR BRIDGEPORT," by John Nolen; with a "Report on Legal Methods of Carrying Out Proposed Changes," by Frank Backus Williams. Issued by the City Planning Commission of Bridgeport (Conn.). 1916. $1.10 postpaid.

Mr. Nolen has the faculty of presenting in a very clear manner definite and practicable recommendations for improving existing urban conditions. This faculty is well demonstrated in the report above referred to. While it has been issued in attractive form and contains numerous illustrations, few of the views are taken from either European or other American cities, but most of them illustrate actual conditions in Bridgeport, and suggested improvements. The report itself, besides the introductory section and the conclusion, takes up in order the following specific subjects: Main lines communication, including some references to city transit problems; the downtown district; the subdivision of city land into blocks and lots; different districts for different uses; parks, playgrounds and other open spaces.

In the preface the city planning commission lays emphasis upon the fact that this is not a final report, "for the planning of a live and rapidly growing city is never final." Mr. Nolen notes the phenomenal growth of the population of Bridgeport of nearly fifty per cent in twenty months. He calls attention to the serious congestion of the downtown district, the lack of main lines of communication and the irrational lot and block system which has resulted from chance or speculative development. He lays emphasis upon the need of continuity in main thoroughfares, although continuity and directness do not mean that such thoroughfares should be absolutely straight. He points out the need of reasonable regulation of the height of buildings which would now cost the city nothing, but would simplify the transportation problem and make it possible to provide better conditions, avoiding increased fire hazard, inadequate light and air and excessive land values in some spots. As a basis for his study of the main traffic system he has prepared a schematic diagram, admittedly theoretical, but indicating clearly the general plan which can be approximated by taking advantage of existing streets and avoiding the prohibitive expense of cutting through new thoroughfares where this can be avoided.

A Treatise on the Kiln Drying of Lumber

(Reviewed by C. H. White, manager of White Brothers.)

THE KILN DRYING OF LUMBER, by Harry D. Tiemann, M. E. Published by J. B. Lippincott Company, Philadelphia. 280 pages. Price $4.00 net.

This is a practical and theoretical treatise written by Harry Donald Tiemann, M. E., M. F., of the University of Wisconsin, who is in charge of the section of Timber Physics and the Kiln Drying Experiments of the United States Forest Service at their forest products laboratory at Madison.

The volume contains interesting descriptions of the structure and properties of wood, with many plates and illustrations and much technical information as to systems of kiln drying, apparatus, etc. It gives scientific explanations of how wood dries and the principles of kiln drying and some very valuable tables on the effects of kiln drying on different woods.

An interesting list is the table giving the shrinkage from green to oven dry condition in various woods. Some of the percentages of shrinkage in the volume are as follows:

Birch	.17
Gum	.15
Oak	.158
Locust	.098
Maple	.12
Sugar pine	.084
Eucalyptus	.225
Douglas fir	.109
Western yellow pine	.115

The list shows over seventy-five American woods, and of all these California eucalyptus shows the greatest shrinkage. This wood is from the common gum tree of California, "eucalyptus globulus," which is not related in any way to the red gum, "liquidambar styraciflua," of our Southern States. The latter wood has been used very extensively on the Pacific Coast for interior trim and furniture. It shows a shrinkage of 15 per cent, against eucalyptus 22½ per cent.

The volume consists of 316 pages and is written in a scholarly and readable style, and the information is authoritative, being the results of a long series of experiments conducted by the United States Forest Service at its laboratory at Madison, Wisconsin.

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Remarkable Growth of Buttonlath

THE development of Buttonlath in California is the largest single contribution to the plaster lath industry of recent years. The inventor—a Californian—was a plasterer for many years and foresaw the possibilities of making a lath of the same material as plaster, which would have a mechanical key and combine lath and plaster in a homogeneous mass. He solved the problem by making a lath with 530 plaster keys per square yard which, when plaster is applied to it, combines to form a wall fireproof, soundproof and free from rust or other defects.

The Buttonlath Manufacturing Company was formed to manufacture this material, special machinery being designed to insure the most efficient production. The factory is a model one, with equipment sufficient to supply the demands of a constantly growing trade. The fact that Buttonlath has been used in buildings costing in excess of twenty millions of dollars in California, Arizona, New Mexico and other Western States, is proof abundant of the success of the material. Leading architects have welcomed it as a distinct improvement over older methods. Its use extends from the finest Class A building on metal studding to practically every class of construction on wooden studding. It is particularly adapted to office buildings, schools, hospitals, apartment houses and hotels, where fireproof walls and ceilings are desired at a minimum cost.

Buttonlath has been used by the United States Government and by the State of California. All the State housing laws and the building ordinances of the leading cities allow its use in all classes of construction.

Some of the prominent structures in San Francisco, where Buttonlath has been used, are the Regents University building, now under construction on Sutter street, Willis Polk & Co., architects; the San Francisco Stock Exchange, Frederick H. Meyer, architect; Mount Zion Emergency Hospital, Livingston building, G. A. Lansburgh, architect, and West Coast Life Insurance Company building. In Sacramento the Native Sons Hall, Washington Miller, architect, and Physicians' building, J. W. Woollett, architect. In Los Angeles the Pacific Mutual building, the new department store for the Ville, where Buttonlath suspended ceilings were used throughout; some thirty school buildings, including the Los Angeles High School, costing in excess of half a million dollars, John C. Austin, architect, and the three million dollar Terminal buildings (largest of their kind west of New York), John Parkinson, architect. Add to this list thousands of other buildings from Seattle to San Diego, west to Honolulu, and as far east as Salt Lake City, and some idea of its widespread popularity can be obtained.

LOS ANGELES HIGH SCHOOL BUILDING
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Buttonlath partitions and ceilings.

A new plant to manufacture plaster Wallboard has been completed by this company. It will be known as Peters' Wallboard and will fill the demand for a fireproof board for insulating and sheathing purposes in all parts of the West. Already the United States Government has purchased several hundred thousand feet for use in the camps on the Pacific Coast. The uses for such a board are many and the product will have the same sterling quality as Buttonlath.

Negotiations are under way for the building of plants for the manufacture of Buttonlath in the big Eastern cities, so that before long this Californian product will be as well known in New York and Chicago as it now is in San Francisco and Los Angeles.

Headquarters for Buttonlath and Peters' Wallboard in San Francisco are now at the Building Material Exhibit, 77 O'Farrell street, the office being in charge of Mr. F. L. Riordan.

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Stockton Electrical Firm Has Successful Year.

Messrs. Goold & Johns, electrical contractors and engineers, 113 S. California street, Stockton, have recently completed the wiring in the Farmers and Merchants National Bank in that city, designed by Mr. Geo. W. Kelham and built by the P. J. Walker Company. The electrical work alone amounted to several thousand dollars. Messrs. Goold & Johns have also completed the wiring in the Wilhoit building, J. C. Skinner garage and the beautiful $20,000 residence of Mr. E. Allen Test, the latter designed by Mr. Chester H. Miller, architect, of Oakland. One of the largest electrical contracts undertaken by this firm during 1917 was the complete overhauling and wiring for power and light in the Geiger Iron Works at Stockton. This contract amounted to several thousand dollars also. The $20,000 residence of Mr. P. T. Cleghorn of the First National Bank was wired and equipped with handsome lighting fixtures, as was the new home of Mr. M. Davidson.

Camp Lewis Number

The December 21 number of the Pacific Builder and Engineer, published by Jed P. Fuller at Seattle, Wash., is devoted entirely to a very complete story of the government's great training camp on the American Lake, near Tacoma. Every phase of the big undertaking is covered and no expense has been spared in presenting the most minute details together with numerous halftone photographic illustrations. The issue is one of the best ever produced by this wide-awake publication in the Northwest.

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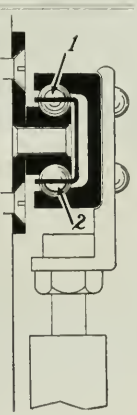

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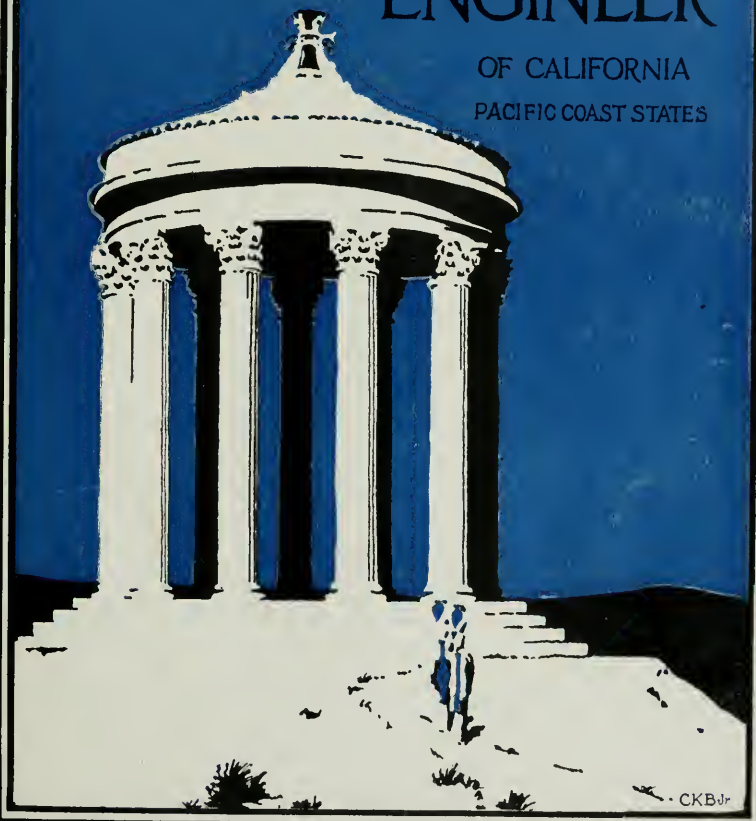

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FEBRUARY, 1918

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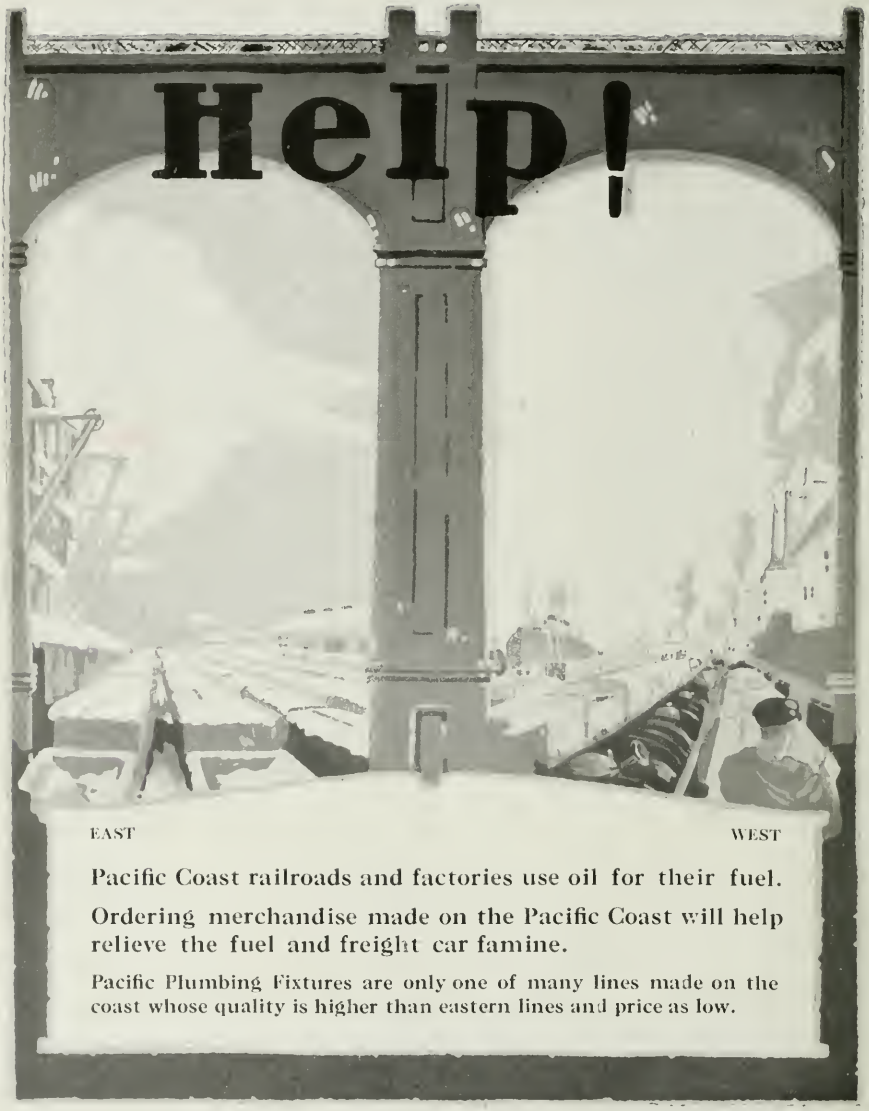

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VOL. LII. No. 2

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Published Monthly at 626-627 Foxcroft Building, San Francisco in the interest of
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MAIN ENTRANCE, PIEDMONT CHURCH
ALBERT FARR, ARCHITECT

Frontispiece
The Architect and Engineer
of California
for February, 1918

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

FEBRUARY, 1918 Vol. LII. Number 2.

Piedmont Church, a Late Example of the Spanish Colonial Type

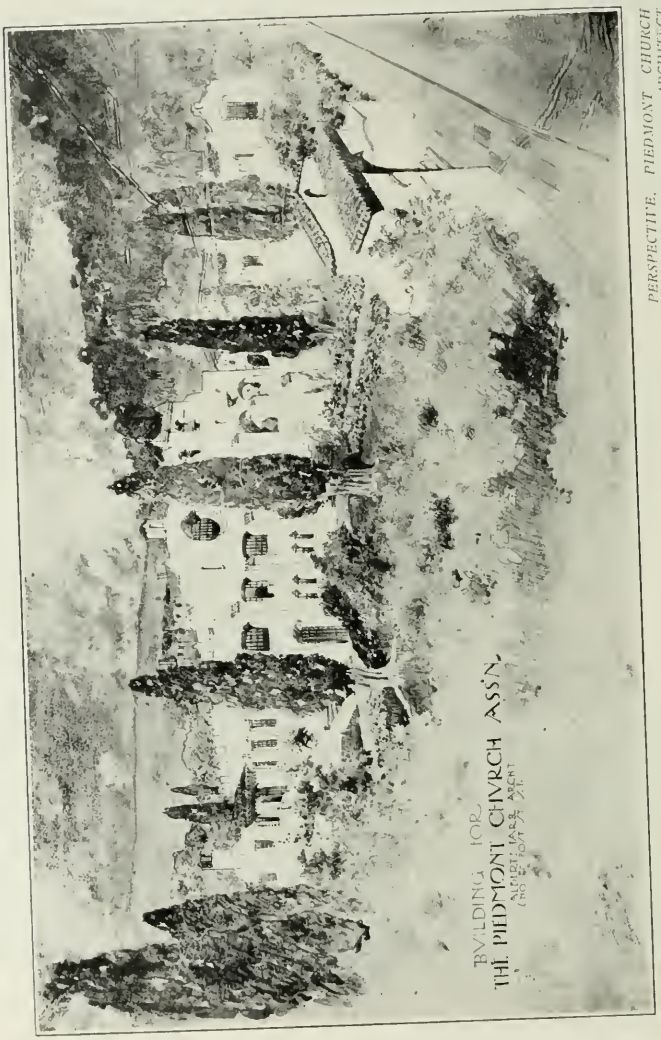
By ALBERT FARR, Architect

IN THE new Piedmont Church at Piedmont, California, is found an attempt to present a modified example of "Mission" or "Spanish Colonial," either name permitting a fairly accurate account of the origin of the style of the building. When the new world of South and Central America, the great center of which was Mexico, was found so rich in gold and silver, it received eager attention from the Spanish monarchs. Their favorites were sent out as rulers. Upon the sites of the Aztec temples were built cathedrals by the royal architects, decorated by skilled artisans and great painters of the day and filled with wonderful offerings by devout worshippers. In some instances votive offerings of entire churches of imposing size were made; the Hidalgo owners devoting a large part of the wealth of their mines to these buildings. The people of Mexico had no mean conception of the arts of weaving, glazing and building, and they contributed much to the impressive culture of the New World.

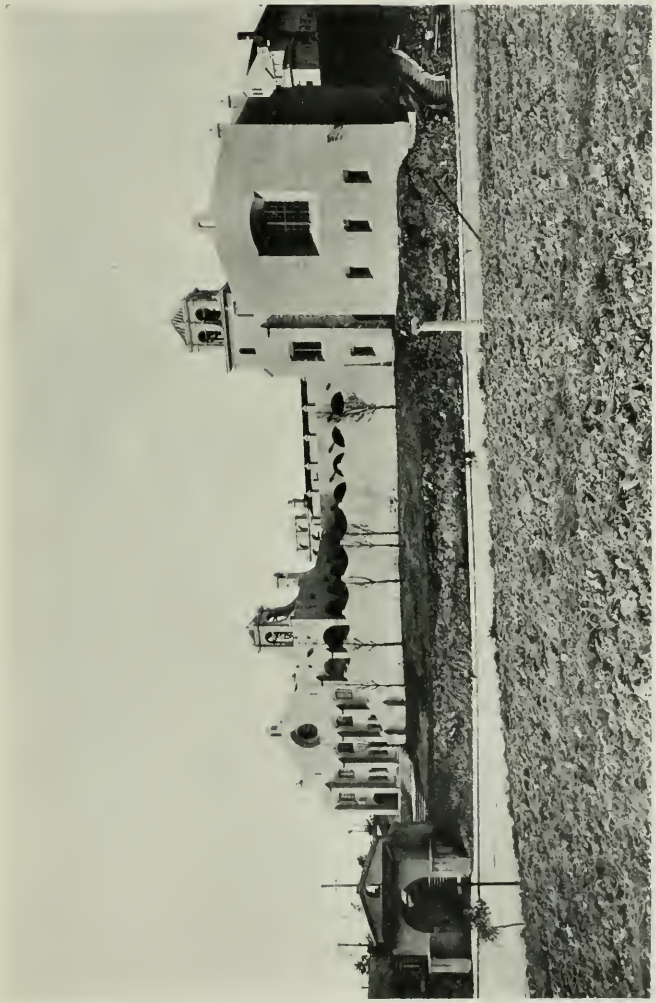
Judging from the relics of this civilization in its paintings, furniture and fabrics brought from Europe and the Orient, our boasted metropolitan centers of today could make no comparison with such wealth.

From a careful survey of Spanish monuments it is to be seen that the Cathedral of Santiago de Compostela, built by José Churriguerra in the seventeenth century, was the principal inspiration of our Latin American buildings. The style thus created from mingling of Italian baroque, Moorish and Gothic, has been compared by eminent writers in the luxuriance of its imaginative quality to the entangled profusion of a tropical forest.

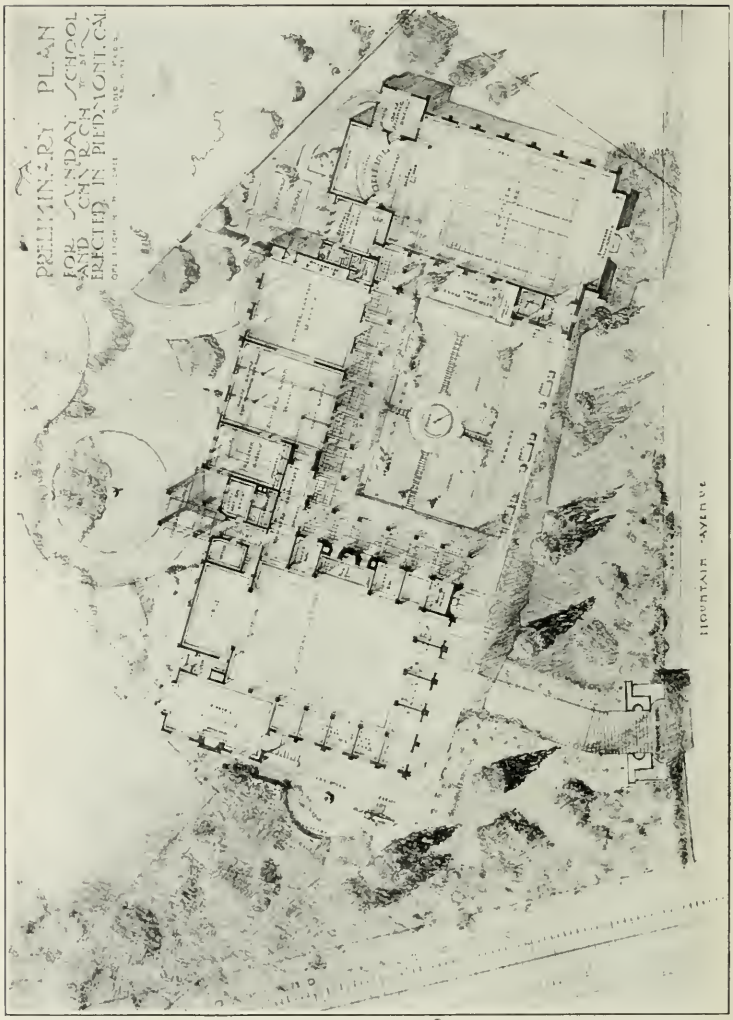
Later in the day began the Conquistadors' march to Nova California, accompanied by the triumphant followers of the Mother Church, whose monuments, simpler of necessity than the cathedrals of the South, are all that is left to us of this age of romance.



PERSPECTIVE. PIEDMONT CHURCH
ALBERT FARR, ARCHITECT



PIEDMONT CHURCH, PIEDMONT, CAL.
ALBERT FARR, ARCHITECT



PLAN, PIEDMONT CHURCH
ALBERT FARR, ARCHITECT

CLOISTER, PIEDMONT CHURCH
Albert Farr, Architect

From such a source toiled forth the beloved Junipero Serra with his brown-gowned cohorts to create the California Missions, and no matter how we may disagree with his dogma we must attest his work that was bravely conceived and heroically done.

It is fitting, therefore, that we should recall to our warm hillsides, from which we dream adventure has fled, some note from the past, to endeavor, for ourselves as heirs, to perpetuate in our monuments the history of the land and to honor those who gave memorable names to the places we have learned to love.

This endeavor, then, has been made in the building of the Piedmont Church; modifying the ancient scheme as little as possible but sufficiently to make it suitable for modern requirements.

So following our exemplars, about a large central court with a fountain of three superposed basins are carried arched cloisters, and closed on three sides with buildings, this court is to be suitably planted with shrubbery, also with its pulpit buttressed against the principal bell tower it is to serve as an open air auditorium when the weather is fair. No forbidden garden is this to be, but a playground and resting place for all throughout the week.

The court is lighted at night with quaintly framed lanterns modeled on Spanish originals. Enclosing the court on the south is a replica of an ancient Mexican cathedral-enclosing wall reached by an imposing flight of steps from a covered entrance placed on the street level.

Upon the left hand of the court is arranged the Sunday-school chapel, with a dark-stained beamed ceiling, in the form of a three-aisled church, the side aisles being closed with folding doors, forming class rooms. This

PATIO LOOKING TOWARDS THE OPEN AIR STAGE, PIEDMONT CHURCH
ALBERT FARR, ARCHITECT

LIBRARY AND RECEPTION ROOM, PIEDMONT CHURCH
Albert Farr, Architect

chapel is provided with a stage for entertainments, provision being made for cinematograph displays as well.

About the stage arch is carried a baroque design borrowed from an antique plaster model. At one side of the room is a large recess with an open fireplace in the depths of which are placed Spanish benches.

Off this portion of the building is the Women's Guild and reception room pleasantly furnished and also with open fireplace. Leading in from a porte-cochère at the rear is the Sunday-school superintendent's office and a ladies' rest room as well.

The large basement is to become a meeting place and drill-hall for the Boy Scouts. Showers will be installed and here boys and boys' interests may have a home. A tennis court in the yard will be for the use of all lovers of the game. The balance of this part of the building is devoted to quarters for the caretaker and for an oil-burner heating plant.

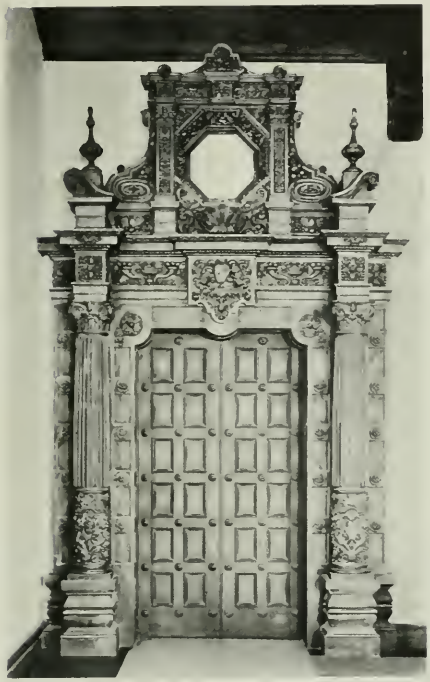
The central portion of the buildings and joined to the Sunday-school chapel by a vaulted passage, are a number of minor rooms, including kitchen, kindergarten and the Red Cross headquarters, which are a busy center in these emergency days.

The right wing of the building comprises the church proper, a single-aisled structure, entered from the cloister at the north end of the building, and from the court through a quaint entrance at the south. This auditorium seats three hundred or more persons.

The doorways, choir screen, reading desk and diaconal seats are in the Churigueresque manner, decorated in gold and polychrome; the two door-

CHANCEL ARCH, PIEDMONT CHURCH

ASSEMBLY HALL, PIEDMONT CHURCH
Albert Farr, Architect



INTERIOR DOORWAY PIEDMONT CHURCH

Albert Farr Architect

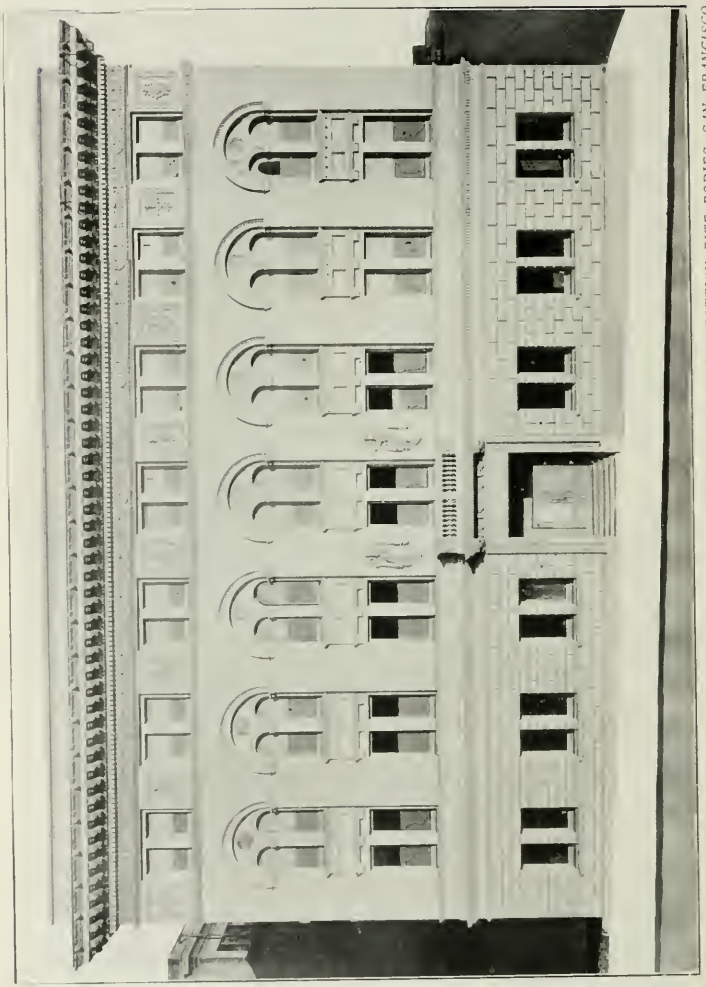
ways at the upper end of the church taking the places of the usual arrangement of side altars of earlier churches, seen in such familiar examples as the "Dolores" in San Francisco.

The chancel of the church is lighted by a low dome, of rare use in this State but common farther south. Upon each side of the dome the latticed screens in the archways were in the older buildings to shield the cloistered nuns from profane eyes; here, however, they serve to conceal the mechanism of the beautifully toned organ. Above the chancel and behind the choir screen which serves as a railing is space for a large choir, the acoustic qualities of the building and the arrangement promising much in the way of organ recitals for music lovers.

At the side of the chancel is a vestry room, serving as reception room and library, fitted with book cases, large table and brightly covered chairs of a Spanish type. Above this room, by way of concealed stairs, is the pastor's study, with open fireplace, balcony and sunny outlook.

The interior of the building is lighted by indirect fixtures, the forms of antique sanctuary lamps being adapted to that purpose.

The gardening is still in embryo, but the architect's drawings show the building partly covered with masses of appropriate foliage, with here and there groups of tall trees echoing the lines of the bell towers.



VAN NESS AVENUE FRONT, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO.
O'BRIEN & WERNER, ARCHITECTS

BUILDING FOR OAKLAND SCOTTISH RITE BODIES
O'Brien & Werner, Architects

Some California Masonic Temples

PROBABLY no building outside of those generally recognized as of a public character, such as Federal, state, county and municipal structures, calls for more critical inspection than the Masonic Temple or Scottish Rite Cathedral, and it may be said without exaggeration that not until recently have the Masonic bodies appreciated the fact that better architecture and better buildings are desired, in fact expected from them.

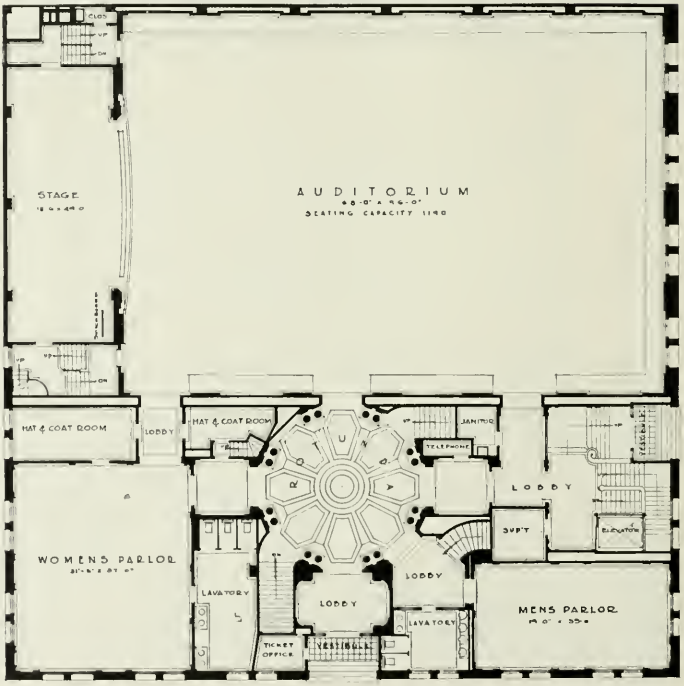
Mr. H. P. Knowles, writing on Masonic Temples in a recent number of the Brickbuilder, now the Architectural Forum, says:

Like other structures of a semi-public character, they are almost invariably placed in the charge of a building committee, and the Masonic building committee, like the majority of building committees, is hampered at the start by the belief that the greater the number of designs submitted for its consideration the more likely it is to secure a building that will be satisfactory to the fraternity. Unfortunately many of these competitions have not been conducted under such supervision as would induce architects of standing to compete, and the results are almost invariably distressing to all but the successful competitor. This condition applies, of course, to the majority of similar building operations, but it seems as if the buildings of fraternal societies suffered more from this complaint than any other type.

Another reason that is largely responsible for the mediocre character of a large number of the Masonic Temples in the smaller communities is the custom of limiting the selection of an architect to one or two of the local members of the profession who are members of the lodge. The result, of course, is in strong contrast to the case of a town library, for instance, where the building

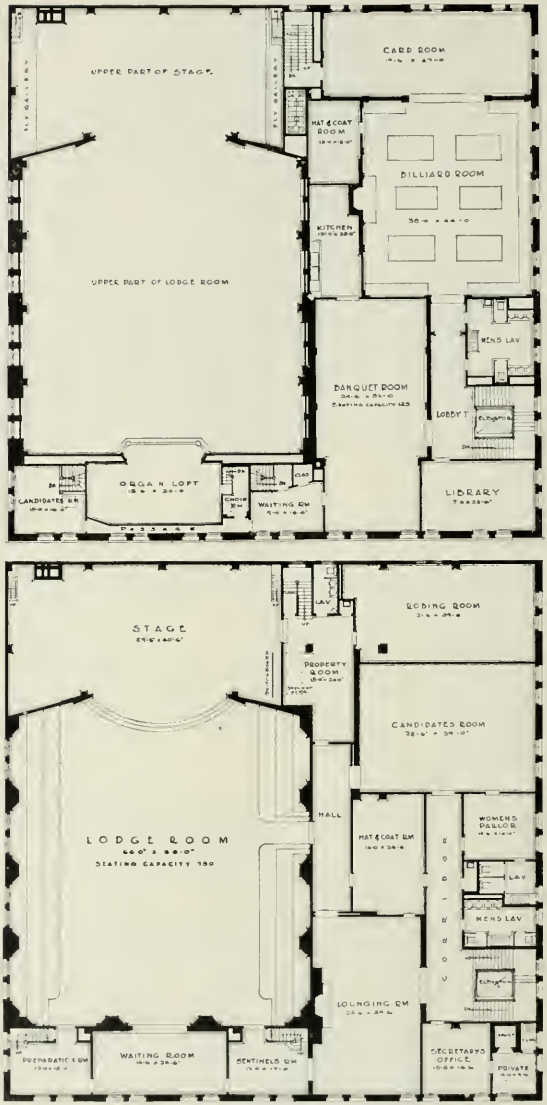
Exterior, Building for Scottish Rite Bodies, San Francisco.

O'Brien & Werner Architects.



FIRST FLOOR PLAN, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'Brien & Werner, Architects

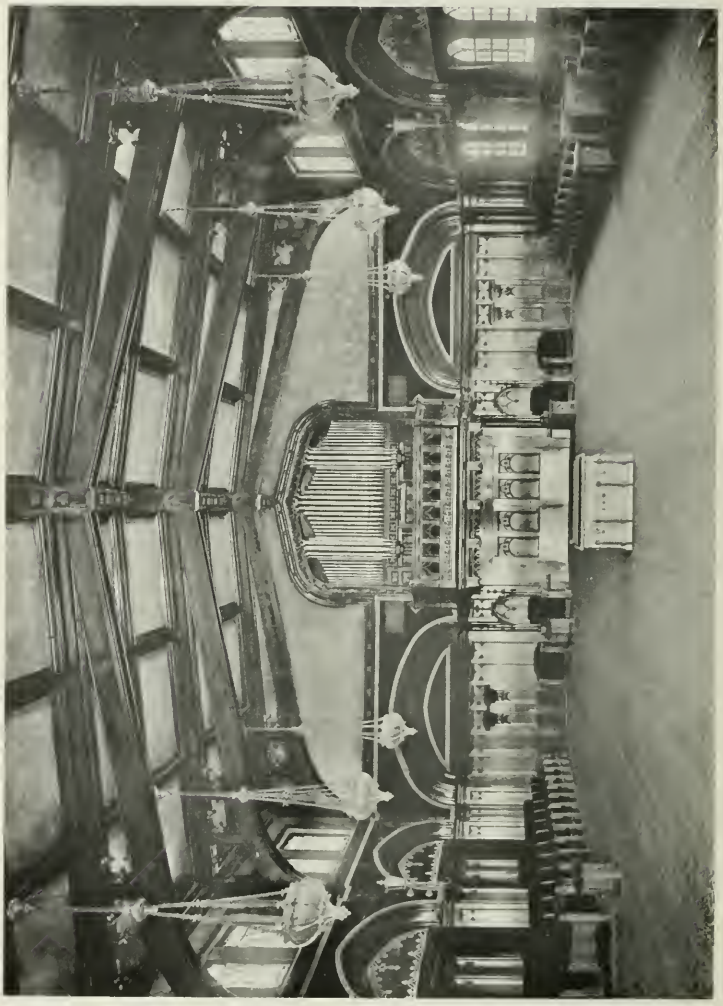
BASEMENT AND SECOND FLOOR PLANS, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'BRIEN & WERNER, ARCHITECTS



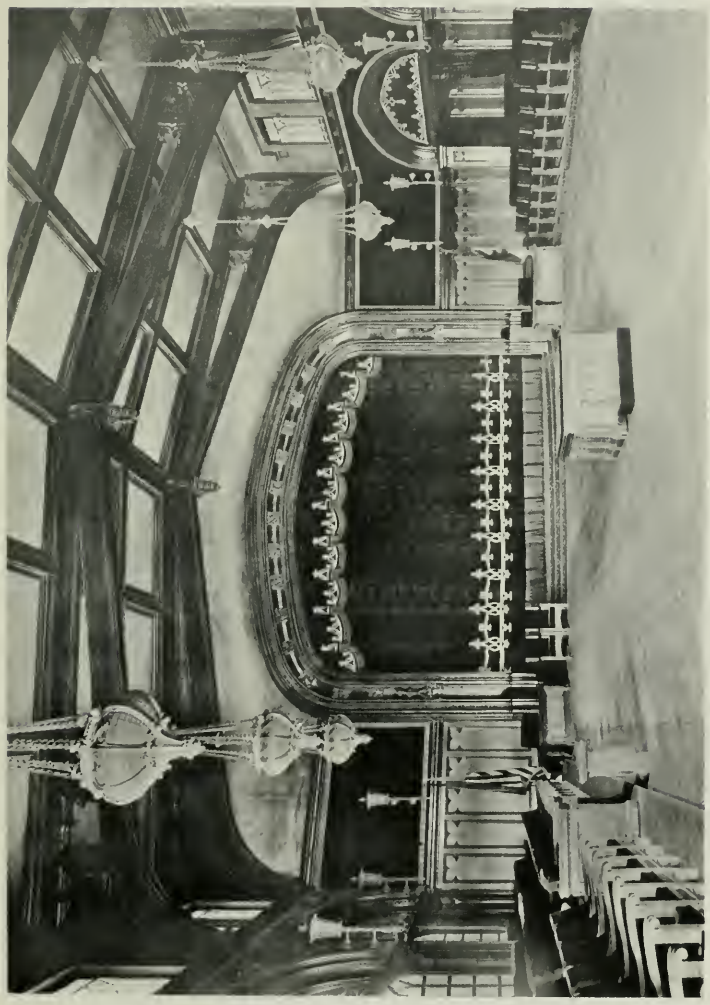
THIRD AND FOURTH FLOOR PLANS, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'BRIEN & WERNER, ARCHITECTS

ROTUNDA, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'Brien & Werner, Architects

LODGE ROOM, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'Brien & Werner, Architects



LODGE ROOM, BUILDING FOR SCOTTISH RITE BODIES, S.F., SAN FRANCISCO
O'BRIEN & WERNER, ARCHITECTS



LODGE ROOM, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'BRIEN & WERNER, ARCHITECTS

committee is not limited to local architects for its selection and is free to go outside of the town for talent if the local supply is not deemed sufficiently experienced.

In common with most building committees, the first question which confronts the majority of Masonic Temple building committees is the everlasting economic one: first, the wherewithal to build; and second, the reliable flow of the wherewithal to keep the building going after completion. As usual with the preliminary work involved in erecting buildings that are designed to accommodate the many, the first question is over the site. With this settled, the debate as to the character of the building to be erected begins. It must be decided whether the structure is to be a purely Masonic building or whether it shall be partly commercial—say with stores or a bank on the first floor, or perhaps a story or two of offices in the lower floors with the remaining upper portion devoted to lodge purposes. The object of the stores and offices is to afford additional revenue which with the lodge rents will provide sufficient funds to care for the upkeep of the building without burdensome taxation of the lodge members.

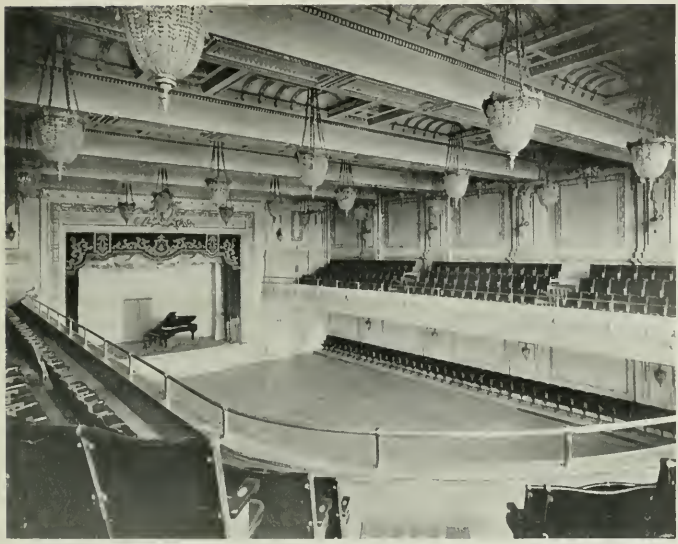
The partly commercial and partly Masonic type of building appeals to many; but leaving out for the present any architectural consideration, the writer's experience leads him to believe that seldom if ever is a Masonic building committee which is subject to frequent change in its makeup successful in the management of a building when outside interests have to be considered. The average Masonic building committee, which as a rule only meets at stated intervals, is not suited to the proper care of a commercial building unless it secures the services of a competent superintendent capable of dealing with the tenants and who is available at all times to look after the interests of the building and its owners. The commercialism of such a structure robs it of that private, homey, or clubby atmosphere which is so essential to the successful housing of a Masonic lodge.

A building designed to be used exclusively as a Masonic Temple should be dignified, of good proportions, built of substantial honest materials, and carefully planned to suit the purposes of the fraternity. This may well be said of any building, but it applies particularly to buildings of this class, and all those who are familiar with the teachings of Masonry and its lectures will appreciate how important this is.

The semi-secret character of the organization and the fact that its meetings, or communications as they are called, are held in places where observation cannot be had by those not within the circle, must necessarily stamp the exterior of such a structure with a character quite in contrast with its neighbors.

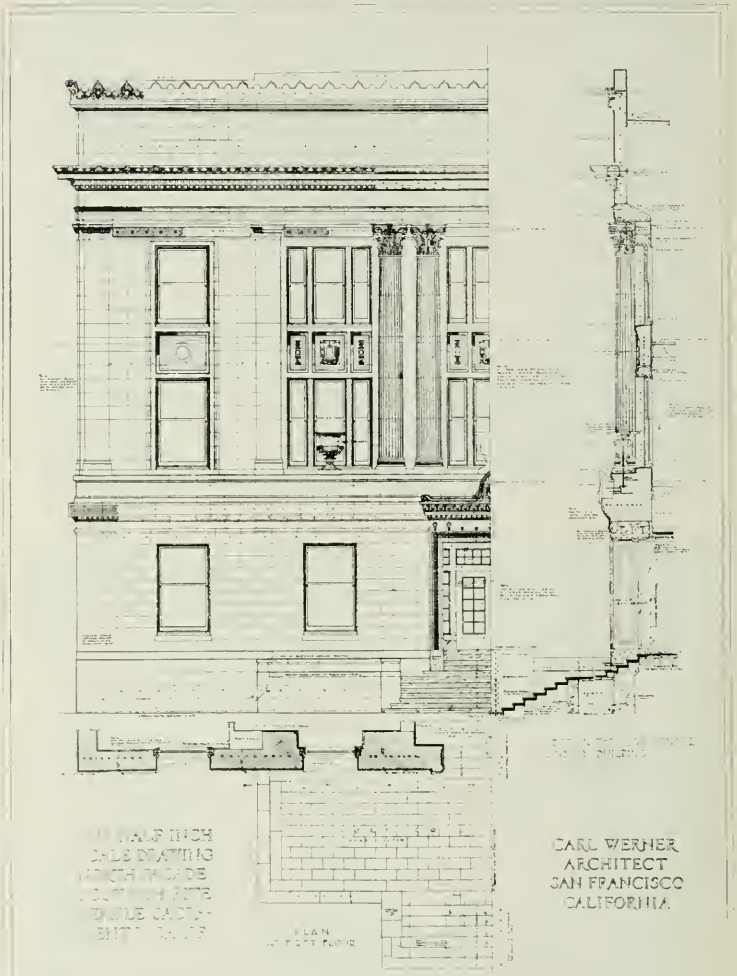
Aberrations in the form of so-called Egyptian Temples have been erected to house the fraternity—buildings which look more like morgues or jails than the homes of an organization whose object is the uplift and betterment of its members. These forbidding structures are designed to emphasize the secret side of the order, giving the impression to the uninitiated that Masonry is a mysterious organization whose members participate in solemn rites and are bound together by oaths for some mysterious reason not to be divulged under the most awful penalties.

If such were its only attraction, the organization would not have existed until now, nor have wielded the influence it undoubtedly does. In reality the secret side of the order is least important. There are obligations and signs by which one Mason may know another, which are secret, of course; but as compared with the actual reasons for the order's existence, this aspect of it is insignificant and need not be considered any more in the external treatment of one of these buildings than would be the case with a club or any other similar

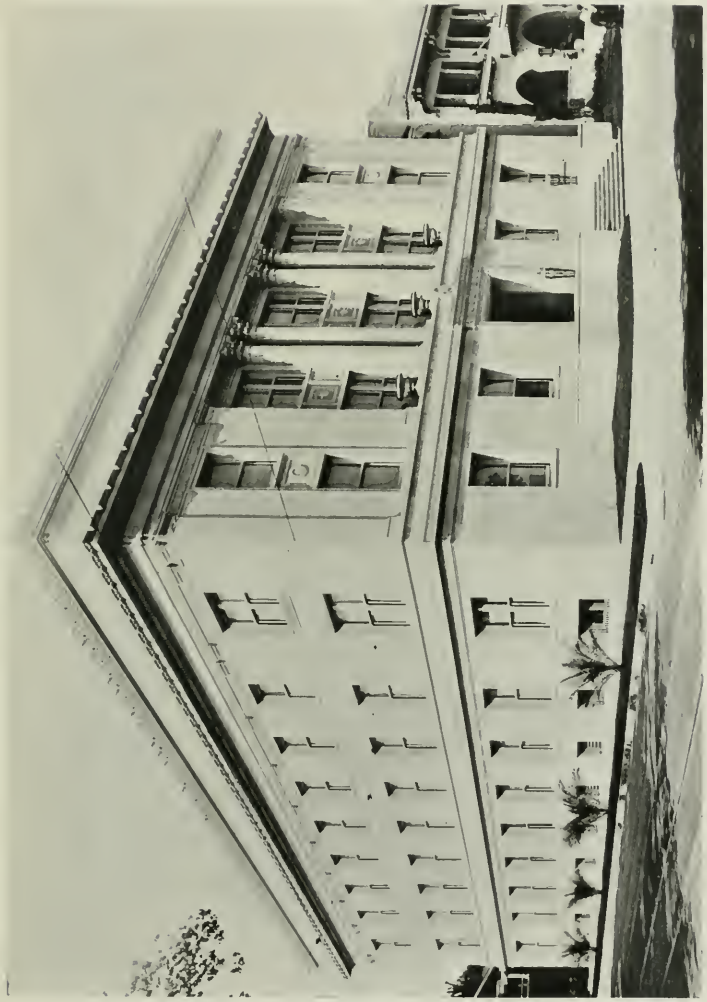


AUDITORIUM, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO

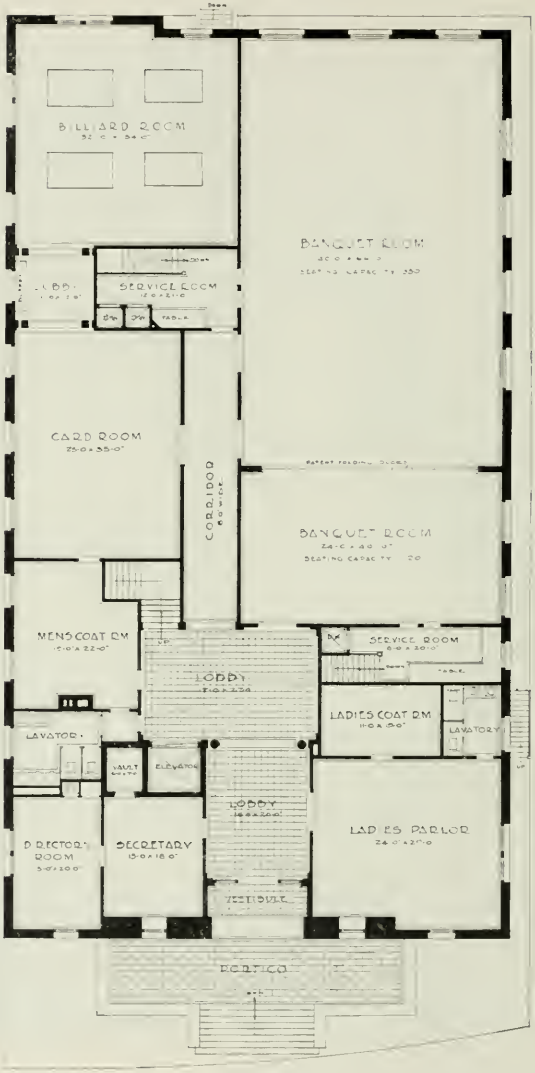
LADIES' PARLOR, BUILDING FOR SCOTTISH RITE BODIES, SAN FRANCISCO
O'Brien & Werner, Architects



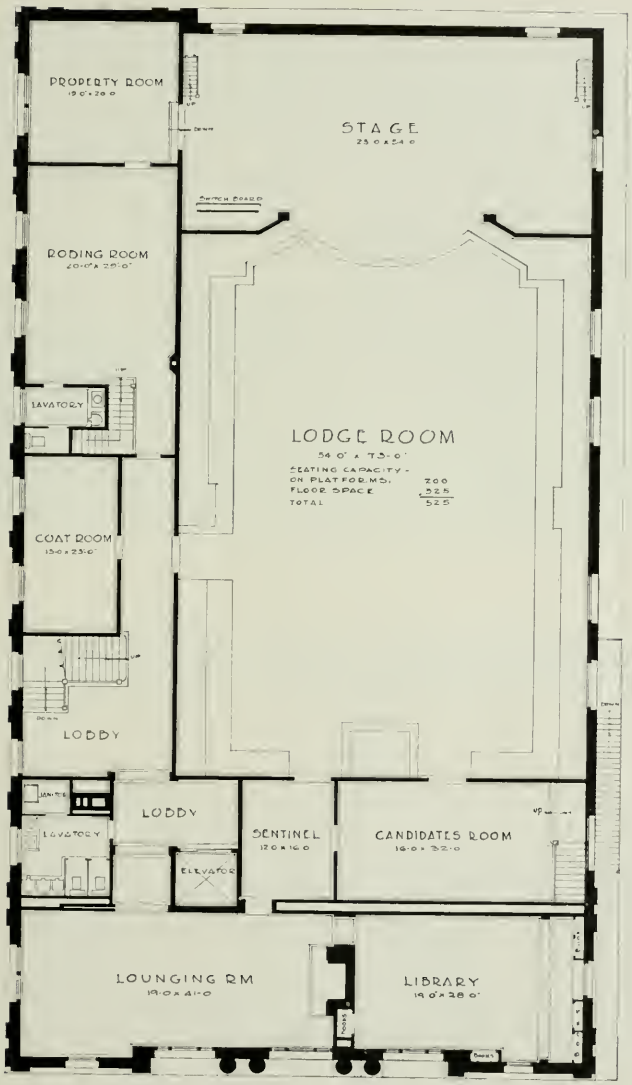
DETAIL OF NORTH FACADE, BUILDING FOR SCOTTISH RITE BODIES, SACRAMENTO CARL WERNER, ARCHITECT



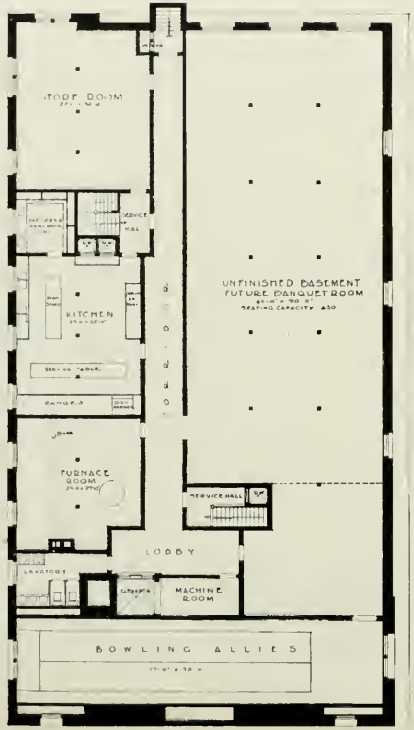
BUILDING FOR SCOTTISH RITE BODIES, SACRAMENTO
CARL HEBNER, ARCHITECT

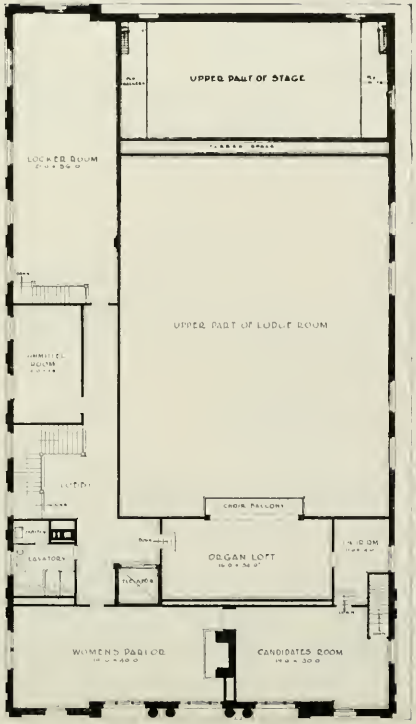


FIRST FLOOR PLAN, BUILDING FOR SCOTTISH RITE BODIES, SACRAMENTO
CARL WERNER, ARCHITECT



SECOND FLOOR PLAN, BUILDING FOR SCOTTISH RITE BODIES, SACRAMENTO
CARL WERNER, ARCHITECT





BASEMENT AND THIRD FLOOR PLANS, BUILDING FOR SCOTTISH RITE BODIES, SACRAMENTO
CARL WERNER, ARCHITECT

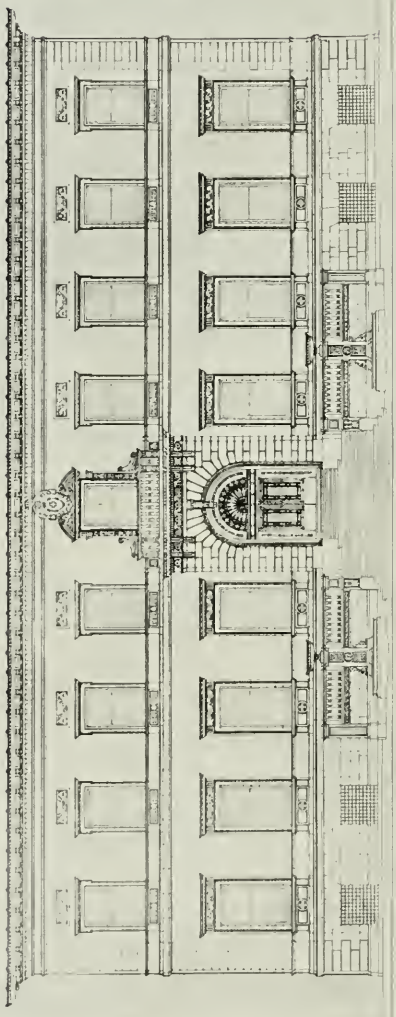
LODGE ROOM, BUILDING FOR SCOTTISH RITE BODIES, SACRAMENTO
Carl Werner, Architect

structure where privacy is essential. The fact that few openings are needed in the outside walls and the necessary large height of the stories will stamp the building with a character sufficiently suggestive to indicate its purpose. The lodge rooms must, of course, be absolutely secure from any espionage, but the building need not be made to look like a morgue or a jail in order to guarantee this necessary privacy.

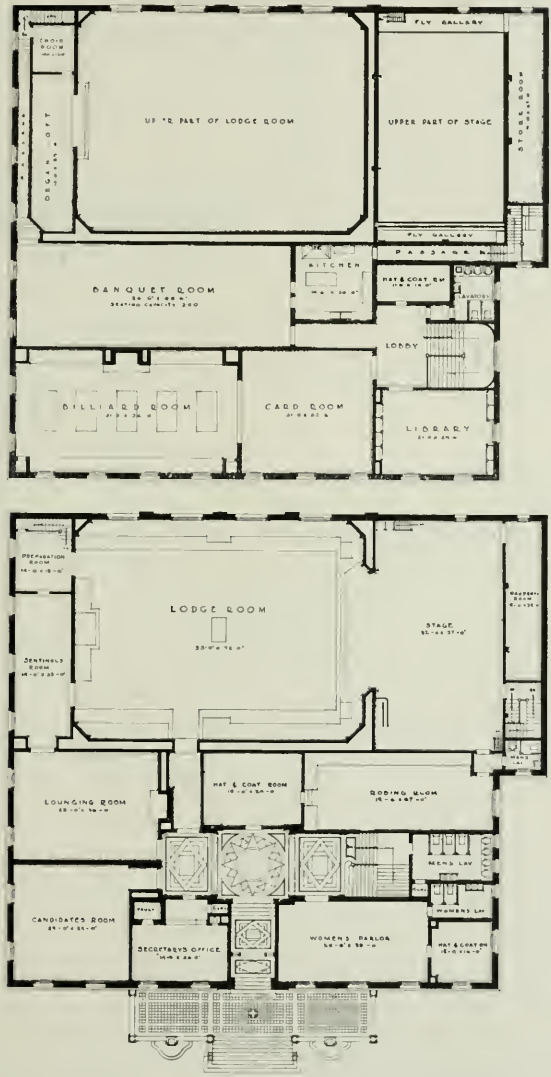
* * *

A word or two as to the meaning of Masonry may be of interest to those who have not been initiated. The Masonic fraternity came into existence several hundred years ago, but just when is a matter of discussion among Masonic authorities. The antiquarian will trace the origin of the trade unions of the Middle Ages and demonstrate beyond controversy that modern speculative Masonry is the direct lineal descendant of the traveling Masonic Guilds to which medieval Europe owes its magnificent cathedrals, monasteries, and abbeys. The philosopher will go farther and find the germ or dominant idea of modern speculative Masonry in the "mysteries" or secret societies of antiquity; but undisputed records show the existence of ancient operative guilds, not unlike our modern labor unions except that they were secret in character, and only those who were in the possession of certain signs and words were able to enter their meetings. These guilds or lodges gradually developed into lodges of speculative Masonry, and their doors were opened to any seeking admission who were "free born, of lawful age, and well recommended."

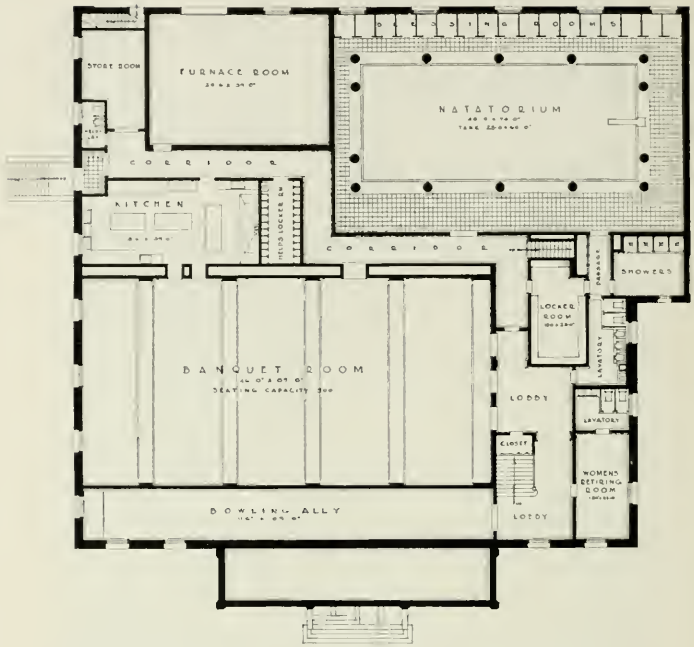
Masonry has been defined as a system of morality, veiled in allegory and illustrated by symbols.



FRONT ELEVATION, BUILDING FOR SCOTTISH RITE BODIES, FRESNO
CARL WERNER, ARCHITECT



FIRST AND SECOND FLOOR PLANS, BUILDING FOR SCOTTISH RITE BODIES, FRESNO
CARL WERNER, ARCHITECT



BASEMENT PLAN, BUILDING FOR SCOTTISH RITE BODIES, FRESNO
Carl Werner, Architect

The organization has assumed large proportions, especially in English-speaking countries, although it has many adherents in almost every quarter of the world. It endeavors to spread the teachings of brotherhood, and the lectures and ritual contained in the various degrees through which the candidates must pass are so full of symbolism that the design of the temple, at least its detail, must surely bear its traces both on the exterior and interior.

It is a difficult matter to compare the home of such an organization to any other structure. It is not usually termed a religious institution, although it is founded on religious teachings. Its meeting places are not considered places of worship, although every lodge room must be furnished with an altar or pedestal on which is placed the Holy Bible, and prayers are said by lodge chaplains and hymns sung by its members. It cannot be termed a club in the usual sense of the word, although it is an organization of men, membership in which requires that its candidates shall be regularly proposed, and for which initiation fees are charged and regular annual dues are collected. The communications or meetings are held at regular stated intervals, usually twice each month. The proceedings are carried on in accordance with strict ritualistic form prescribed by the Grand Lodge authorities. This ritualistic form, with its obligations, passwords, grips, signs, etc., is secret.

Masonry is the oldest of all secret organizations, and the majority of modern societies which initiate members with ceremonies of a secret nature will be found to have modeled these ceremonies after those of the Masonic Order.

Masonry is primarily the lodge known as Free and Accepted Masons, and from this various branches have sprung which are sometimes called the Higher Orders, and in a community which boasts a lodge there will usually be found a Chapter of Royal Arch Masons, and in the larger towns a Commandery of Knights Templar. Another branch of Masonry is the Council, which generally holds its meetings in one of the lodge rooms of the Masonic Temple. There is also a system of degrees known as Scottish Rite Masonry. This branch of the fraternity will also be found meeting in the Masonic Temple, but in the larger cities it is usually housed in an independent structure of its own, a very notable example being the beautiful Scottish Rite Temple in San Francisco designed by Mr. Carl Werner and considered the finest Scottish Rite temple in the United States. The Mystic Shrine and Grotto, allied Masonic organizations, are found only in the larger cities and occupy buildings of their own constructed especially to suit their own uses.

The average Masonic Temple for a small city of about 100,000 inhabitants will usually require two lodge rooms to accommodate seven are eight lodges, a chapter room, assembly room, banqueting room, etc.

* * *

The buildings illustrated in this article are representative of the best in Scottish Rite architecture in California and were designed by Mr. Carl Werner of San Francisco. Mr. Werner has made a study of Masonic building architecture, as his drawings would seem to indicate, and he has not only designed to meet the requirements of the various Scottish Rite bodies but has given the structures an architectural treatment that is refreshing when compared with some of the monstrosities built in the earlier days of the Golden State.

The building for the Scottish Rite bodies at Van Ness avenue and Sutter street, San Francisco, was erected soon after the fire and is a pleasing example of Italian Renaissance with a strong Gothic feeling dominating the interior. The Sacramento building is pure classic, while the proposed new Fresno building is suggestive of both the Italian and Classic. Several buildings designed by Mr. Werner, but not illustrated, are the Petaluma and Santa Rosa Cathedrals, both treated in the Georgian or Colonial periods.

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* *

Are Concrete Ships Feasible?

A COMMITTEE report made public recently by the American Concrete Institute gives an affirmative answer to the question of the commercial feasibility of concrete ships for ocean service. Concrete barges for still-water use have been built, but as yet no concrete ship has been navigated in a rough sea where its frame must withstand the stresses developed when it acts as a beam supported between two successive waves, or as a cantilever supported on one wave. The committee says:

In a steel ship the entire cross-sectional area of the midship section acts to resist these stresses, taking into account, in determining the moment of inertia, all of the continuous members, such as continuous scantlings and deck side and bottom plates.

In the concrete ship, equivalent strength must be provided. In the case of the concrete ship, however, only the steel reinforcement can be relied upon to take tensile stresses. The concrete assisted by the steel will take the compressive stresses.

The effect of the rapid change of the character of the stress in either the deck or the bottom is much more serious in the case of a concrete ship than in the steel ship for the reason that, owing to the low tensile stress of concrete, cracks will occur at the extreme fiber under relatively low tensile stresses in the steel. These cracks, if any, alternately opening and closing, may tend to cause disintegration, with resulting leaks or impairment of the reinforcement.

At the present time, little information is available as to the effect of such reversal of stress, and but little can be hoped for until an actual trial has been made of a concrete ship in a sea.

There is an almost unanimous opinion among naval architects and seafaring men generally that a concrete ship will be so inelastic that she will tear herself to pieces in a sea. While it is doubtless true that in a concrete ship there will not be the same readjustment of stresses as in a steel ship when subject to the action of a heavy sea, experience with reinforced concrete structures generally has shown that such structures have considerable elasticity and there is ample reason for the hope that reinforced concrete will prove a suitable material for shipbuilding purposes.

Although it is conceded by the committee that a thin layer of concrete does not afford perfect protection to the steel against corrosion by salt water, the committee believes that if the reinforcing steel is galvanized and covered with carefully made concrete well waterproofed, there should be no serious danger from corrosion.

A concrete hull designed to carry a load of 2000 tons (or "dead weight") and having a displacement of 3675 tons is estimated to cost $126,000, or $63 per ton of dead weight. The cost of a similar steel hull would be $90 to $120 per ton of dead weight and that of a wooden hull $70 to $100. The committee sums up by saying:

Your committee feels that it is not its function at this time to prepare any detailed plans for a concrete vessel. It is manifestly impossible to design a style of vessel that will be applicable to all classes of service. A barge for use on the canals of New York would not be an efficient type for use in harbors or on the Ohio or on the Mississippi.

Vessels heretofore built have demonstrated that the small barge for still water service can be built and successfully operated. The solution of the larger problem of a concrete ship will include the solution of smaller vessel problem, in which questions of strength are not of the same prominence.

Although there are some questions regarding the concrete ship which can only be answered by actual experiment, the studies which your committee has made point to the commercial success of the concrete ship.

Your committee suggests that specifications for a concrete vessel should embody the following principles:

1. Both cement and aggregates should be selected with great care to insure a concrete of maximum efficiency.

2. That concrete should be placed in one continuous operation to insure monolithic construction. The concrete mixture should be such as will develop a crushing strength in excess of 3000 lb. per sq. in. when tested in standard cylinders at 28 days. A concrete consisting of one part Portland cement, one part sand and two parts ½-inch aggregate may be expected to give such a concrete. The mixture and workmanship must be such as will assure impermeability.

3. The reinforcing steel should be in the form of deformed bars and should be galvanized.

4. In parts of the vessel where cracks in the concrete would tend to cause leaks, the stress in the steel should be kept low (preferably less than 12,000 lb.).

5. Some form of elastic waterproofing coating should be applied to the hull below the deck.—Engineering-Contracting.

An Early Italian Expression*

THE new living room in the residence of Mr. Edward A. Faust, Portland Place, St. Louis, is a Florentine room of the Middle Ages and is based upon the designs of the Salons in the Palace of the Davanzati. This palace was located on the Via Porta Rosa, one of the chief streets within the oldest boundary walls of the city of Florence.

While the architects, the T. P. Barnett Company, have drawn their inspiration from this wonderful old palace, the Faust living room is, in no way, an exact copy of the Salons of the Davanzati.

Nevertheless, throughout, the atmosphere and the influence of the antique pervade all features of the room. This is the only room on this continent carried out in the antique feeling of this period, with truth and fidelity to details and character of this Romantic Renaissance era.

The room adjoins the principal dining room of the Faust home and is approached by a stairway of regal grace and magnificence. This stairway is constructed of solid Travertene stone with balustrades of the same material, beautifully carved and decorated.

An exquisite window, decorated by beautifully carved and twisted columns in wood, is one of the striking features of the west wall and shows, in its detail, the transition from the Gothic to the Italian Renaissance.

The carved frieze under this window is embellished with primitive paintings on a background of gold and graffito. This window is filled with a lacy grill of antique gold.

On the east wall of the room is the beautiful mantel in carved stone, which is a replica of the mantel in the principal Salon in the Davanzati Palace. It is carried out with accurate fidelity to the original and has all the characteristics of the antique example. This mantel is flanked on either side by windows in which rare examples of Italian painted glass are found.

These windows are jewel-like in their brilliant coloring.

Old glass and leading has been used throughout, the sash of the windows is set in deep reveals in the heavy walls, each window forming a recess of its own.

The walls are executed after the old plaster method of the period, and are left in a color similar to an antique parchment.

The ceiling of the room is in fine harmony with the strong character of the whole apartment and consists of heavy wood girders, supported on carved corbels. The heavy girders support the beamed and paneled ceiling, which is constructed of wormy chestnut which has been aged to exactly represent the old wood of the 15th century.

The woodwork throughout the room is hand wrought and no paint, stain, nor varnish has been used in its finish.

The exposed ceiling panels between the beams are decorated in an old blue and gold in tempera colors.

Antique solid wood shutters and entrance doors with their armor plate covering, studded with antique nails, adhere closely to the traditions of the time.

The architects have created, in this beautiful Salon, an atmosphere for antique furniture and paintings.

The principal object of art in the furnishing of the room is the magnificent Flemish tapestry of the latter part of the 15th century, representing the "History of David and Bathsheba" formerly in the Royal Palace

* Courtesy Architectural Service Department, Standard Varnish Works.

LIVING ROOM, RESIDENCE OF MR. EDWARD A. FAUST
T. P. BARNETT COMPANY, ARCHITECTS

LIVING ROOM, RESIDENCE OF MR. EDWARD A. FAUST
T. P. BARNETT COMPANY, ARCHITECTS

at Madrid and the Chateau of Vierville (Calvados). This tapestry is 21 feet 5½ inches wide and 11 feet 10½ inches high.

This immense tapestry, which includes no fewer than 38 figures—those in the foreground being life size—represents within the same frame a series of incidents from the history of King David and his wife Bathsheba, the mother of King Solomon.

The foreground of the composition is covered with plants and flowers. The whole is enclosed within its original border, composed of garlands of foliage, forming part of the design.

A beautiful primitive painting by Juste Van Cleve of the Flemish school, 15th century, adds a note of exquisite color to the room.

Antique banners in silk and gold are hung from a frieze of hand-wrought nails which extend around the entire room.

A rare antique is the Templa panel on the west wall which carries out in its panels of Tempera paintings, the life of Christ, in colors of rarest beauty and charm.

The furniture throughout the room is of the transition period and is done in old blues and gold, covering of the chairs being antique brocades and velvets.

The floor coverings are Oriental rugs and the floor itself is of teak wood framed together with ebony dowels.

The hardware throughout the room is hand wrought iron.

Two magnificent chandeliers, suspended from the beams of the ceiling, are of Italian wrought iron work, and are done in polychromatic colors of the period.

Other lighting effects in the room are obtained by ecclesiastical candelabra, and other beautiful brackets of the Renaissance period in old gold.

An interesting feature of the interior is the old-fashioned locks and keys which have been used in the hardware furnishings of the room.

The room, in its beautiful quiet colorings and neutral tones is a great relief from the stock decorators' French period rooms with their garish colorings and tawdry effects.

The French period room has been done to death in America, and this room should awaken a more keen interest in the simpler and more primitive styles of Italian art.

* * *

Why Buildings Collapse

S. J. WILLIAMS, engineer of the Wisconsin Industrial Commission calls attention in a statement recently issued to the collapse of buildings said to be due to poor construction and violations of the State code. Recently a one-story building intended for a garage in a Wisconsin town collapsed, injuring six persons employed thereon, including the owner. But two days before the accident, the industrial commission warned the owner that the walls of the building he was constructing were too thin and the overhead trusses not properly constructed. A similar accident occurred a short time previously.

"I am convinced that there are more instances of the collapse of buildings in construction than we ever hear of," said Mr. Williams. "Unless lives are lost, or workmen are seriously injured, the contractors and owners responsible for such poor construction do everything possible to cover up these disasters. The principal reason why buildings so often collapse is poor construction of long span trusses. Contractors who have never before done any work of this character undertake the same without securing advice from any qualified source. These contractors even claim to be architects, but when something happens they plead ignorance and profess that they never heard of the State building code."

The Engineer of Today*

By HENRY J. BURT, President Western Society of Engineers

HOW many engineers are there in the United States? So far as I can determine there are no complete figures on record. There is no general or complete system of registration for engineers. The nearest approach to it are the records of the engineering societies. The four largest engineering societies have a combined membership of about 30,000; we can assume that the duplicates in their lists are more than offset by the membership in smaller organizations. The number not enrolled in these societies must be a matter of speculation; certainly the number not enrolled is equal to the enrolled membership, and from some observations that I have made I can conceive that it might easily be twice as great. Thus with the registered membership of 30,000 as a basis, the total number of engineers in the United States may be estimated at anything between 60,000 and 100,000. In a circular of the United Engineering Society the number is placed at 73,000. Taking the larger number 100,000 as the basis of discussion, there is one engineer for each 1,000 of our population, or one-tenth of 1 per cent. This seems a small proportion, and it is indeed so, but it is ever increasing, and I think no one would attempt to fix any definite limit as the maximum number that would be useful among our people. When we consider that the profession is little more than a century old, that 100 years ago there probably were not a hundred engineers in this country, these figures are significant.

While the proportion to the total population is small, the distribution is fairly even throughout the United States. Engineers are to be found in every community, and are known in the most remote districts. This thorough distribution places them in a position to leaven the entire mass of our population so that their influence can be made to be felt everywhere.

These figures are useful, not for their absolute value, because that is so uncertain, but for giving the impression that the gross number is large and the proportion is small. The wide and tolerably uniform distribution of engineers is the interesting point.

The field of engineering practice is so broad and its outer limits merge so much into other things, that it is almost impossible to give it definite boundaries. It comes in contact with and interlocks with manufacturing, trading, promotion, scientific research, law, medicine, agriculture and in fact almost every form of human endeavor. The work is so diversified that it is difficult to realize that it all belongs to our profession.

Within itself the vocation is arbitrarily divided into four fields, viz.: Civil, Mechanical, Electrical and Mining, to which might be added Military and Marine Engineering. The division between these fields is not a straight fence, but is more like a barbed wire entanglement, in that it does not follow a well defined line; quite unlike it in that there is no barrier between the divisions and they lap over and merge in a way that makes it impossible to mark a definite separation. Each of these major divisions in turn is subdivided into an indefinite number of minor divisions, each having its own little sphere more or less definitely defined.

With this great diversity of occupations, with its members scattered broadcast, is it any wonder that there is lack of unity and common purpose? The wonder is that there is anything in common.

The relation of the engineer to his work merits consideration. The great majority of engineers are employed rather than retained, meaning by employed that his whole service is rendered to a certain employer for a

* From an address presented before the Iowa Engineering Society.

salary, and by retained that his service is rendered in a specific matter and compensated by a fee. The former is continuous employment for a greater or less period of time for a single employer. The latter's special employment for a particular purpose and the practitioner may be so engaged to any number of employers at the same time. Such a practitioner is known as a Consulting Engineer.

The consulting engineer is generally conceded to be at the head of the profession, and his practice to be the most desirable form of service. Some contend that these are the only ones who are entitled to be called professional engineers. But we are concerned with facts and conditions, so we will not argue about definitions. It seems that the consulting engineer has greater liberty of action and is less subject to the will of his employer than the salaried man, and so he can do his work without bias. To the extent that salaried men are restrained somewhat in their solution of the problems put before them, their conclusion warped by the wishes of their employers, and their development forced along certain lines and retarded along others, to this extent salaried employment is undesirable. But the consulting engineer has like troubles and I am not sure that he is more fortunately situated or entitled to higher standing that his salaried brother.

From the very nature of the work to be done all cannot be consulting engineers, not even a considerable percentage. The great number must be salaried men. The consulting engineer if he does much work must have assistants, perhaps a hundred of them. The assistant may be a better engineer than the chief, but there must exist the relation of master and man. Engineers seldom work alone, but in groups, for most engineering works are of such magnitude as to require several men or of such character as to require men of varied qualifications. Such groups are usually under the command of an engineer. So it is that most engineers are employed by, or work under, the direction of other engineers, a most desirable relation and one that must have had much to do with the rapid development of the profession. The young man starts out with a college education, is employed under a man of experience and gets the equivalent of apprenticeship, and, advancing, gets the benefit of higher grades of direction until he himself becomes the head of an organization. Could there be a better system of development? As in all other lines of endeavor, advancement will be influenced both by ability and by opportunity. In some cases promotion will be unmerited, in others merit will be unrewarded.

As in other callings this one has its problem of compensation. No need to worry about those who are well advanced in the profession. They can command adequate reward for their services. But the great number of beginners and men in the lower grades need consideration. Every live man has an ambition to improve his condition, and having this desire he is easily and frequently persuaded that he has earned an advance in salary. There undoubtedly is considerable unrest on this account. I will not enter into a lengthy discussion of the proper compensation. Suffice it to say that beginners, college graduates, receive about the same pay as common laborers, and men of ten years' experience about the same as unionized mechanics. Considering the time and money cost of an education and the importance we assume for this profession, such compensation does not seem adequate.

Closely allied to compensation is continuity of service. In both large and small organizations there is a tendency to hire and fire according to the pressure of work. Little effort is made to control the work so as to maintain a uniform force. This cannot be closely controlled due to the fluctuating business conditions of the country, engineering employment being

peculiarly susceptible to these fluctuations. But there is some possibility of improvement.

Inasmuch as most engineers are employed by or under the direction of other engineers, the question of pay is a problem within the profession more than it is an issue between the profession and the public. So on you employing engineers rests the responsibility of its solution.

The engineer of today is a man of character. Study if you will the engineers whom you know intimately and I believe you will find almost without exception that their characters will stand the closest scrutiny and analysis. This is so not because they are made of superior clay, for they come from all sources and conditions. I believe it is because their education and the nature of their everyday occupation make for the building of strong and rugged elements of character.

Higher education in itself is a great builder of character. This can be conceded without discussion. But even more important is the effect of his employment. He deals with facts or with data which are as nearly true as he can ascertain. His first act in entering upon any enterprise is to establish the truth about the attendant conditions and on this foundation he fabricates his structure. Woe be to the engineer who purposely or carelessly distorts the data on which he bases his work. He is doomed to failure. He must be honest with himself, and that makes him honest with his fellow men.

He deals with affairs of greater or less magnitude and thus gets breadth of vision or more accurately he is obliged to see his problem from all viewpoints, study it from all angles, picture the result from front and rear, from inside and outside, from above and below, see the structure in the brilliance of its newness and dullness of its age. Where most people are satisfied to think twice he must think twenty times, else he will miss some element of the problem and reach the wrong conclusion. Thus the necessities of the case make him thorough.

As a usual thing, the engineer is not an advocate. He is more often an arbiter. His habits of work tend to develop a judicial mind, for he must decide questions of fact, must weigh relative values, and must conclude from the preponderance of evidence. This enables him to treat all people fairly whether they be clients, employers, employes or the general public. Although not usually an advocate there are times when he should be one. When his studies have led to conclusions that are unassailable he is justified in being an advocate, and in matters of public welfare should be a most positive and persistent advocate. But in matters of a controversial nature and matters in the interest of private business, the ground is dangerous. It is almost out of the question for an engineer in such cases to keep free of bias and partisanship. To speak plainly he is tempted to be dishonest.

The work of the engineer is largely of a public nature. Military work is directly so, as also is the work done for the general government, the State and the municipality. Less directly so are public utilities, railroads and telegraph. Marine work, ship building and anything concerned in foreign commerce are not much removed from public work or public utilities under present conditions. The construction and operation of manufacturing plants intimately concern domestic commerce and hence the public welfare. Mining and the related industries are in the same category as manufacturers. Surveying of land affects not only the property surveyed but also adjoining property and is, therefore, a quasi public function. The public has an interest in everything we do.

Engineering is a productive industry which may fairly be rated as being exceeded in importance only by agriculture and perhaps manufacturing. To me it is one of the greatest satisfactions I get from my work to know that

it contributes something to the wealth of the community and adds to the comfort and convenience of people.

Our work is not finished and never will be so long as our present form of civilization lasts. There is still more of the same kind of work to be done, and new problems to be solved. Much of our designing is still on an empirical basis. The rational solution is needed. Much of our construction is still experimental and must be studied and improved by experience. Some day our coal will be gone and our oil exhausted, then we must harness the wind and the heat of the sun. When the copper supply runs low it may be necessary to train the electricity to jump from station to station. We now purify our water supplies—soon we may need to purify the air in congested centers. The impatient people are demanding quicker transportation between residence and business. We cannot foresee what the future has in store. It may give new things quite as remarkable as those of the past.

Let us take a look at the engineer in his home town. We see a law-abiding citizen, modest, a man of high character, too reticent of his doings, lax in public affairs. He has the standing of the average citizen. His neighbors know he is an engineer, but have little conception of what he really does. There may be another of his kind a few blocks away.

His standing in his community can be what he chooses to make it. He has the foundation and the qualities of leadership and can be a leader if he chooses to be. He needs publicity. His neighbors should know what he does and, most important, what he is capable of doing. If his talents are not demanded in public affairs, he should volunteer them.

The public, through its schools and colleges, has made the engineer a superior man. By this means the public acknowledges his importance to the body politic and by thus educating, places him under obligations to his state and to his country. He is a public character who has been educated at public expense and his work is of such a nature that the results of it have an influence on public welfare. With all this goes great responsibility, particularly in view of the fact that his own developments are responsible for so many of the public problems. It may be argued that his responsibility ceases with the performing of the particular things that he has been educated and trained to do—that he has no public responsibility outside of the practice of his vocation. Under certain circumstances an engineer might fulfill all his responsibilities by the practice of his vocation, but in most cases this is not so, for his practice is designed primarily to contribute to his own benefit. Comparatively a small part of the work which he does is done for the general good without direct compensation therefor. However, there are many exceptions to this, and a great many people are serving the public freely in a professional way in addition to the regular pursuit of the vocation.

This return service to the public or to the state, need not be in the line of his profession or vocation—it may take any form. It may be in the form of charity—it may be in the form of social service—it may be in every-day politics—it may be in volunteer work on public committees or commissions. It may be even the apparently small service of co-operating with his neighbors in any movement for betterment of local conditions. A great many men are giving such public service—perhaps only in a small degree, but in some degree. It seems indisputable that every engineer owes service of this kind in compensation for his education and as a direct responsibility in connection with his work, for I believe responsibility is measured by one's ability to do and that it cannot be equally divided among all people. Those of meager attainments and small capacity cannot be called upon to assume the same responsibilities that must be shouldered by men of great attainments and great ability.

Jointly Conducted Tests of Building Columns

FIRE TESTS of building columns, being jointly conducted by the Associated Factory Mutual Fire Insurance Companies, the National Board of Fire Underwriters, and the Federal Bureau of Standards, at Underwriters' Laboratories, are progressing according to schedule, two columns being tested each week. The work of testing began last summer and will require a year for the completion of the full series of 100 tests. This was preceded by several years' work in designing and erecting the testing apparatus and in preparing and covering the test specimens by the different methods and with the various materials required for a full investigation.

The apparatus used in the tests consists briefly of a gas furnace capable of being controlled according to a specified standard temperature curve, reaching a maximum of 2300 degrees Fahr. (1260 degrees Cent.) at the end of an eight-hour test. The load on the columns while being subjected to fire test is supplied by means of a hydraulic ram, an average load of 100,000 pounds being maintained during the test, this being calculated for the various sections according to accepted formulas for working load.

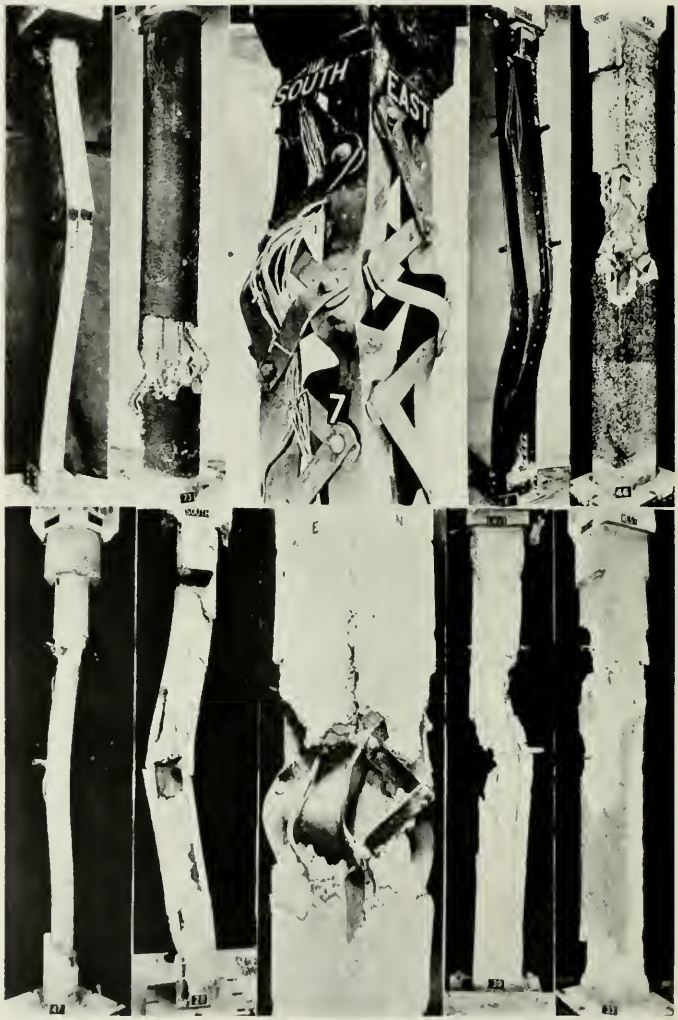
The temperature of the column furnace is measured by means of platinum and base metal thermo-couples, supported in porcelain tubes at two elevations; and that of the columns, by means of base metal thermo-couples attached to the metal of the column at four elevations and at different points in the section. The temperature indications are read with a potentiometer indicator and connections are also made to an automatic potentiometer recorder, so that graphic records can be obtained, if desired, of the indications of any set of couples.

The vertical compression and expansion of the columns, due to the load and heat, are measured over a gauge length of 37 inches in the upper half of the column by means of wires attached to the column at each end of the gauge length, the other ends being weighted and passed over an idler at a point outside of the furnace and as far from the column as room conditions will permit. The wires are protected inside and outside of the furnace by suitable insulating and protecting tubes. Readings of vertical movement are taken at intermediate points on the wires by means of microscopes mounted in micrometer slides, the true movement at the column being calculated from the distance relations of the microscopes and the fixed end of the wire, with reference to the point of attachment to the column. The lateral deflection of the column is measured by means of readings on scales placed perpendicular to and parallel with the wires.

All of the tests are of full-sized columns of 12 feet 8 inches effective length and of various steel sections, which are protected by concrete, tile and other forms of fire-protective coverings. One column of each type is tested and unprotected; also several concrete columns reinforced according to methods used in current practice have been introduced.

The tests are continued to a break-down of the sample, and hence no inferences as to the comparative merits of the various column designs and column coverings should be drawn from the illustrations, which show simply the effect of load and fire on a number of samples which have been subjected to test. The time required to obtain failure varies with the type of material and thickness of covering, the periods for the columns so far tested ranging from 17 minutes for the unprotected column to over eight hours for the heavier types of protection.

This is the first work of this character ever undertaken employing modern forms of columns and methods of protection, and it is expected



EFFECT OF LOAD AND FIRE ON BUILDING COLUMNS

that it will develop data of great interest to city governments, underwriters, manufacturers, architects and engineers.

Specifications for columns and column coverings have necessarily been made ever since the advent of modern fire resistive construction, but there has been little or no experimental data as a basis for the various requirements promulgated, which in point of amount of protection required differ by more than 100 per cent as between various city building codes.

It is also thought that the tests will give much information on the general fire-resistive qualities of the covering materials employed. Differences in point of effectiveness of over 100 per cent have already been found as between concretes made from different aggregates, some showing up unexpectedly well and others indicating decided unsuitability for use where the fire-resistive feature is a point of importance.

* * *

The "Cost Plus a Fee" Contract for Building Work

ABOUT fifteen years ago Mr. Frank Gilbraith started an advertising campaign in the civil engineering periodicals that made the "cost plus a fee" form of contract famous. Mr. Gilbraith advocated what he called the "cost plus a fixed sum contract." His work consisted mainly in erecting industrial buildings and power plants. During the last decade many contracting firms have adopted the "cost plus a fee contract," and it has steadily grown in popularity in the building field

Mr. J. P. H. Perry, manager of the Turner Construction Co., specialists in reinforced concrete buildings, says that the tendency in reinforced concrete building construction is more and more toward putting the contractor on a professional basis. This is accomplished under a "cost plus" form of contract. Not only are reinforced concrete buildings more susceptible to serious defects from poor workmanship, but the contractor, particularly if he is an engineer or employs engineers, can often point out betterments in design. Under a "cost plus" contract, the contractor has nothing to gain by slighting the work and everything to lose, for he secures contracts solely because of his reputation and not because he is the lowest bidder. Under the "cost plus" contract it is also to his interest, since it enhances his reputation, to point out to the owner or his representative any economies that can be effected by changes in the design; and there is no gainsaying that even the most skilled structural engineer or architect can frequently improve a design by adopting an experienced contractor's suggestions.

The "cost plus a fee" form of contract has received an unprecedented amount of free publicity in connection with the Government contracts for cantonments and ships. Therefore, it will be easier than hitherto to persuade private owners and public officials to adopt this form of contract for structural work. Contractors, however, will find it necessary to continue giving publicity to the "cost plus" contract; and already several engineering contracting firms have begun to advertise quite extensively to secure contracts on a "cost plus" basis.

* * *

Come through with your work, unless it is nailing interior finish.

Many a man would do a better job if he didn't know about putty.

Trouble is often the sandpaper of life smoothing the path of the future.

Willis Polk Deplores Unnecessary Cessation of Building

(Telegram to Honorable Franklin K. Lane, Secretary of the Interior, Washington, D. C.)

My dear Frank:—

I know that you will not doubt my sincerity, but I do not know whether or not you value my judgment; still, although human nature is prone to weakness, I beg your consideration of the following:

Secretary McAdoo is quoted in today's papers as urging, pending the duration of war, the cessation of home building so as to save capital, material and labor. To support this plea the Secretary announces that the Treasury Department is refusing to let contracts for Federal Buildings.

I would like to let you know that I have been in close communication with building interests the country over for many years, especially during the past three years and now wish to go on record as vouching for present conditions in the building business as follows:

First: The draft has not materially depleted the ranks of skilled labor in the building trades, most good mechanics being between the ages of thirty and fifty.

Second: The steel mills popularly supposed to be entirely occupied in war work are now eager, so I am advised, to accept orders for structural steel for building purposes at a base price of 3c. per pound, which is practically normal with pre-war conditions, whereas only eight months ago they demanded a base price of $3\frac{1}{4}$c. per pound. I am further advised that while war plants are working at full capacity, that mills especially equipped for building purposes, but not adapted to war purposes, are practically idle, hence the eagerness, practically amounting to solicitation, on the part of the steel mills to accept orders at 3c. per pound.

Third: From advices received, I have every reason to believe, as I know to be true in our local market, that the volume of business in building lines has fallen off during the past year about 55 per cent over the previous year.

Fourth: There is no disposition upon the part of anybody that I know, not to give President Wilson's administration 100 per cent of loyal support and it is not in the spirit of carping criticism nor for political motives that I now address you. On the contrary, it is in the spirit of absolute loyalty to the administration that I bring these matters to your attention.

I want to ask you the following questions:

Grant that for war purposes the Government should without question absorb all available resources—labor, capital, energy, transportation and materials, what possible good can ensue if the people of this country comply with Secretary McAdoo's appeal and cease building, and the Federal Government, as Secretary McAdoo says it has done, ceases to let contracts for Federal buildings, what good can ensue if such cessation on the part of the Government and the people, only results in throwing out of employment, and out of use, such labor, plants and materials, as may not be required by the Government for war purposes, what good, I ask, can result?

Of course, all available capital that can possibly be found should be devoted to war purposes, but a cessation of ordinary employment of labor will not increase available capital. If Smith, in possession of a little capital, instead of buying Liberty Bonds employs Jones to build a house and Jones gets the money, then it would be up to Jones to buy the Liberty Bonds. The capital employed in building such a house would not be dissipated or go out of the country, it would merely change hands.

I do not know what I could personally do to help the Government, but I assure you that every ounce of my energy and every fleeting thought of my brain, as well as every drop of my blood, is at the disposition of Uncle Sam for a dollar a year or nothing at all.

It is not my desire to dictate or to sit in counsel—it is my desire to co-operate.

Unnecessary and unwarranted cessation of business, building or otherwise, might be a calamity equal to a German invasion.

If I am wrong I will accept your version, if I am right and my argument doesn't apply to Eastern or other sectional conditions then zone the idea.

WILLIS POLK.

Architects' Responsibility for Contracts and Bonds*

By RICHARD J. O. CULVER †

THE general subject of building law is so varied in its scope, including the duties of architects, their rights and responsibilities, their relations to owner and contractor; the building contract, bonds, mechanics' liens, etc., that it would be impossible in a short space of time to deal with any phase in an exhaustive manner and I can only hope to give you a few ideas concerning some of the most important points with which the architect has to deal in his daily occupation.

The architect was originally not only the designer of buildings and the superintendent of their construction, but was also the contractor. In later times the architect has been defined as "a person skilled in the art of building, who understands architecture and whose profession it is to form plans and designs of buildings and superintend the execution of them." Your experience, in the last few years, I know, has convinced you that your duties are much more comprehensive.

The profession has grown to be of such great public importance that its legislative control is sufficiently justified. Modern methods of construction and considerations of public health and safety have been the means of causing the enactment of laws requiring applicants for certificates to practice architecture to be examined and licensed by a state board of architecture. This legislation has been held to be constitutional, and its various phases and requirements are undoubtedly perfectly familiar to all of you. The architect has the ordinary remedies under his contract with the owner for the breach thereof. His employment is not of a confidential nature, unless he so contracts with an owner, and he is not responsible in damages to an owner because he makes public the fact of the proposed improvement.

In the beginning of his employment, he is only the agent, known as the common law agent, of the owner. After the contract has been let, the architect occupies the dual capacity of agent of the owner, and an umpire. It is his duty to the owner, as his agent, to represent him fairly in all transactions, but to go no further. It is his duty as an umpire to hear both the owner and the contractor impartially, and to give his decision on any matter without prejudice.

An architect who procures more from the contractor for the owner than the building contract requires, or who does not exact from the contractor what he reasonably is entitled to require, is guilty of a breach of his duty, and commits as well a breach of ethics of his profession.

The architect is ordinarily under the original building contract made the arbiter as to the quality and quantity of the work, and must act fairly and should not withhold stipulated certificates due the contractor arbitrarily or upon caprice, or upon any objection based upon his own mistake in formulating plans and specifications.

Architects, in some instances, are representatives of concerns handling certain kinds of materials or equipment which are specified to be used in the building which they are employed in constructing. The law does not prohibit this and in fact does not in any manner condemn it as long as the owner has full knowledge that such is the case. I will not discuss this in the light of the ethics of your profession.

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* An address before the Southern California Chapter of the American Institute of Architects.
† Attorney, Haas Building, Los Angeles.

When an architect undertakes to draw the plans for a building, he impliedly represents to the owner that he possesses reasonable skill and knowledge in the things he is required to know, and it is his duty to exercise reasonable care and diligence in the performance of the services he undertakes to perform. The rule applicable generally to members of learned professions, such as doctors and lawyers, is equally applicable to the architect.

When once the work of preparing the plans and specifications is completed and the bid for the work has been accepted, architects in recent years have, in a great many instances, undertaken to prepare the contract and bonds on behalf of the owner. While some attorneys have complained that this is an entrenchment upon their functions, I have no quarrel with the architects for doing this work. Very often the details of a building contract are such that its preparation is more of a tedious duty than a pleasant task. I have had the pleasure to represent the contractor in passing on the contract for buildings both large and small in a number of instances. The only complaint that I have to make is that the architect, in preparing the contract, very often does his work too well. As he has been employed by the owner and is drawing his compensation from that source, he often considers that it is his duty to drive a pretty fair bargain. In such instances, the contractor, if he is represented by an attorney who is zealous in his client's behalf, has a difficulty in procuring reasonable changes in the contract, which the architect readily assents to. The reason for this is that the owner has read the contract as originally prepared and finds that it securely entrenches him, and does not wish to see some hard and fast provision that might work an injustice on the contractor removed from the instrument.

In this regard, I am happy to say that I have had the pleasure to read some contracts prepared by architects which any attorney might take as an example for his future guidance, and which have been more fairly, accurately and completely prepared than seventy-five per cent of the contracts prepared by attorneys.

When the architect undertakes to draw up the building contract, he impliedly agrees with the owner that he possesses reasonable skill in drafting the instrument, and that his skill in such matters is equal to that possessed by those in the legal profession.

If the architects undertake to prepare the bond, the duty placed upon them by law is equal to that placed upon an attorney. If the architect fails in this legal duty, he is liable to the owner and under ordinary circumstances he cannot recover from the owner for the preparation of the same, if they are not properly drawn.

This applies equally well to the preparation of plans and specifications. In this regard the burden of proving the inadequacy rests upon the owner.

This brings us to a discussion of the contract and bonds. No detailed explanation of these matters would seem to be necessary in view of the experience that you have all had in this regard. However, there are a few general ideas which cannot be too often reviewed.

The law as amended in 1911 and as approved by the Supreme Court, requires that the contract, and this includes plans and specifications, shall be filed in the office of the county recorder of the county wherein the land upon which the building to be erected is situated with a bond of the contractor with good and sufficient sureties in favor of the materialmen and laborers before the work is commenced, if the owner is to be protected against liens.

The contract is now somewhat simpler than it was before the amendment of 1911. It matters not in what way the contractor is to get his

compensation. It may be in real estate, personal property or anything of value. There is no longer any requirement of law that any proportion of the contract price shall be retained by the owner after the completion of the building, although I consider such provision in the contract a wise precaution.

The form of the bond which should be used is easily procured. This bond should be signed, not only by the contractor, but by two good and sufficient sureties. The law in this regard is in the plural.

It is surprising how many invalid bonds have been taken in the belief that owners were being protected. I, personally, tried a case in Imperial Valley a few months ago in which the liabilities were only a few thousand dollars and the bondswoman was worth several hundred thousand dollars. Judgment for a lien in full was given and quite properly, although the balance due the contractor was found to be much less than the amount of the liens.

The provisions of law in this regard must be strictly adhered to, and it is the duty of the architect not only to procure two sureties, if he undertakes to prepare the bond, but it is also his duty to have an investigation of the worth of said sureties made. If he accepts straw bondsmen, where he undertakes to accept the duty of passing on the bond, without making an investigation, even though he does so in good faith, and the owner is thereby damaged, I believe that the courts would hold him financially responsible for the loss suffered thereby.

As a suggestion to the architect, I would advise them to have the owner investigate and express his own satisfaction with the sureties before the bond is accepted.

There is no enactment requiring any bond from the contractor to the owner to be taken. This, however, is a very wise precaution, and its amount may be varied to suit the particular necessity of the case, but usually a 25 per cent common law bond is sufficient for all purposes. I have known of instances, however, where I have insisted that the contractor should give a hundred per cent bond to the owner, for I felt that he did not intend to pay any of his bills and was really not worthy of having the job.

What I have said with regard to two sureties applies only to individual bondsmen. Our law provides that a corporate surety authorized to do business in the State is sufficient in such cases.

The law with relation to the construction of public buildings seems to be well established, but not very well understood by architects, attorneys or the courts. I do not know the reason for this, but base my assertion upon personal experience.

I wish to caution you against using the usual form of 50 per cent bond to materialmen on public jobs. While I think this bond can be sustained, yet it is a source of trouble if the job does not work out properly. I have a case involving such question now on the way to the Supreme Court.

The bond on public buildings is required by the statutes of 1897 as amended in 1911. This is not the mechanics' lien statute, but is a provision of the general laws. It requires that the contractor and his sureties must file a bond to laborers and materialmen in the sum of 50 per cent of the contract price, before commencing work. This is the only protection that the laborers and materialmen have, and it is the duty of the architect, if he undertakes to prepare such bond, to see that the materialmen are protected.

With relation to the common law bond to the owner, it is my suggestion to you that if there is any material change in the plans or specifica-

tions or the construction of the building, that the sureties on such bond should be notified, and their consent procured. This will often obviate a technical defense in case the contractor falls down on the job.

There seems to be a general misunderstanding as to when a notice of completion should be filed. This notice must be filed within ten days after the actual completion of the work, and without reference to the time of the acceptance by the architect or the owner, and without regard to the issuance of the architect's completion certificate. It is the fact of the completion, and not the architect's certificate which controls.

I have known in connection with some of the largest buildings in this city, that the notices of completion have been filed within ten days after the actual acceptance by the owner, but more than thirty days after the actual completion. This affords the owner no protection that liens will not be filed after thirty days after the filing of the notice of completion. In such cases the materialmen have ninety days from the date of the actual completion, as the owner forfeits his right to cut off the running the lien time by his failure to file within ten days after the actual completion. The courts will not accept the architect's certificate as any evidence of the date of the completion of the building.

Another duty which is often imposed upon the architect is that of being arbiter in a dispute between the contractor and the owner. In this regard he must act with absolute fairness, or the courts will set aside his decision. If he has given his decision fairly, it concludes the matter. The clause in the contract providing for arbitration is one which works entirely to the benefit of the owner. The contractor cannot go into court on a matter which the contract provides must be settled by arbitration without first having offered to arbitrate the matter. If he offers, and the owner refuses, the courts are powerless to enforce the provision for arbitration, and the only thing the contractor can do is to bring a suit at law."

Upon the conclusion of his address, Mr. Culver submitted to questions from members of the association for more than an hour. In response to inquiries, he advised the architects among other things as follows:

The fact that a contractor becomes insane after commencing work on a job does not relieve his sureties.

An owner who has caused to be filed a 50 per cent bond with sureties who are well worth the amount of the bond at the time the bond is recorded, but who afterward become bankrupt, is entitled to the protection of the law to relieve his property from mechanics' liens.

The completion which starts the time for the owner to file a notice of completion is a substantial completion and will not be postponed because of some trivial imperfection; each case rests on its own merits and the architect should be guided by his own good judgment as to when the building is completed.

An architect is entitled to a lien for his services in superintending the construction of a building and has ninety days from the date of the actual substantial completion of the building, if no notice of completion has been filed, and sixty days from the date of filing a notice of completion, if one is filed, in which to record his lien, if he is employed by the owner.

An owner is not entitled to lock a contractor out of an uncompleted building, if the contractor is proceeding in good faith but with too small a force, under the so-called "three-day clause" in the usual building contract, but is authorized only to furnish an additional number of workmen.

An architect is responsible only for usual or ordinary care in the selection of his assistants and employes.

An architect who has not the skill which he represents himself as having and who fails to draw plans and specifications sufficient for the proper construction of a building which he has undertaken to erect, by reason of his lack of such skill, is liable for any damage thereby caused.

A penal clause in a contract for a failure to complete on time will not be enforced if the actual damage can be ascertained, but for such failure the contractor is liable for the actual damage caused. In rare cases, where the damage cannot be ascertained, a penal clause will be upheld as liquidated damages.

A contractor can recover a bonus in a contract for completing work ahead of time and is entitled to a mechanic's lien therefor on the ground that it is a part of the original contract price.

A premature payment of a part of the contract price, made without the knowledge of the sureties, will exonerate the sureties on the common law bond to the owner.

A notice of non-responsibilty must be recorded as well as posted on the premises.

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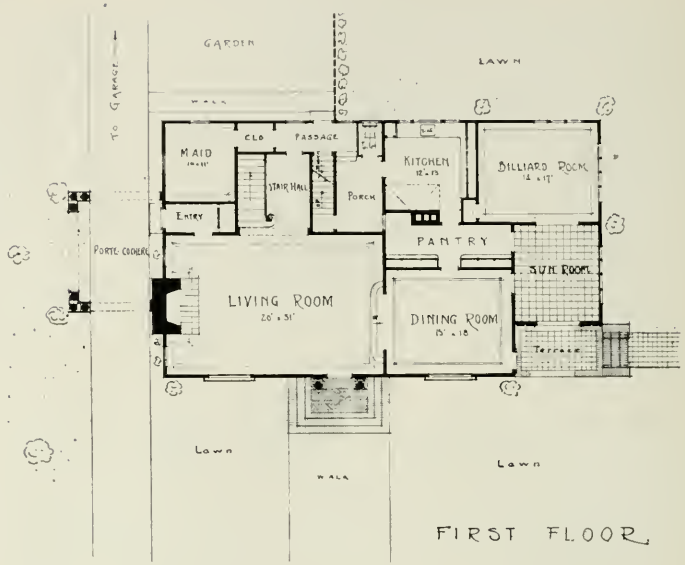
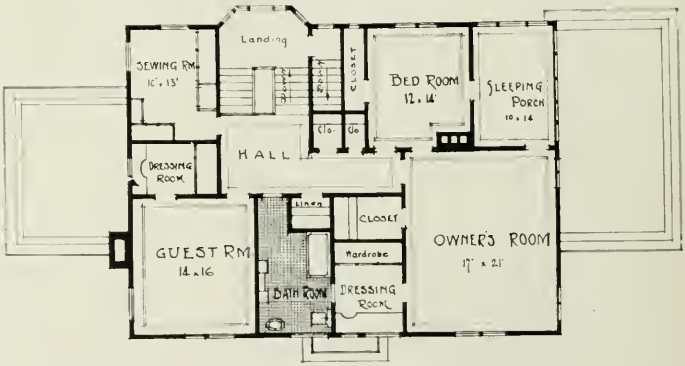
The Civic Center State Building Controversy as Viewed By An Eastern Critic

IN making reference to the dispute which has arisen in San Francisco over the design accepted in a competition by the State for its building in the group that forms part of the Civic Center plan for that city, it is with no wish to enter a controversy of which the merits are difficult to judge at this distance and in which both sides are upheld by architects of national repute. Therefore comment is made because of the news value of a matter which is agitating the profession of San Francisco and the Coast, and its special professional interest because of its effect on the dignity of the profession generally through the personalities which seem to have entered into the discussion, unavoidable perhaps, but still to be regretted none the less. The design is by one of the most capable architects on the Coast, and as a design it seems that the most that can be said against it is that it suggests an Italian building by one of the great architects of the fifteenth century. As there are other buildings in the United States by equally talented architects the lines of which are as suggestive of foreign works, this is not a strong point. But a more serious feature is that the design belongs to a group, with which it is said to scale not at all. And "in plan," this seems to be about all there is to it. Because of the importance of the work, the unquestioned abilities of those who champion both sides of the controversy, the credit of the profession before the community, and the general good of the present and future public of a city that is doing its best to make its architecture notable, we would advise that the whole matter of the design and its suitability to the site and surroundings be taken before the National Commission of Fine Arts at Washington for adjustment, and the judgment of that authoritative body taken as final by all concerned. To its decision no personal or local influence can be charged. Its members are the peers of the professions, and are capable of giving a substantially correct judgment. If that Commission can be induced to take the matter for adjudication it will be a boon to the city of San Francisco in an art sense, and should bring professional harmony again to rest within her gates.—Western Architect.

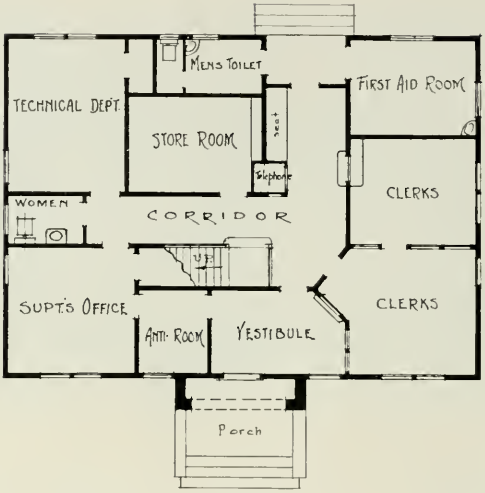


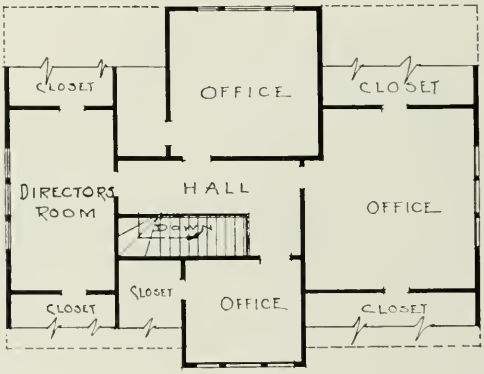


FLOOR PLANS, HOUSE OF MR. E. ALLEN TEST, STOCKTON
Chester H. Miller, Architect

HOUSE FOR MR. E. ALLEN TEST, STOCKTON
Chester H. Miller, Architect

OFFICE BUILDING FOR CALIFORNIA CAP COMPANY
Chester H. Miller, Architect





FLOOR PLANS, OFFICE BUILDING FOR CALIFORNIA CAP COMPANY
Chester H. Miller, Architect

HOUSE FOR MR. F. H. DAVIS, SANTA CRUZ
Chester H. Miller, Architect

BUILDING FOR SPERRY FLOUR CO., SPOKANE
Maurice C. Couchot, Consulting Engineer

Versatile Architects in Demand Today

THE need of an architect is more in evidence today than at any time in the past. In the early days architecture was practiced in much the same way that it is today. The architects carefully designed their buildings on paper and submitted the drawings for estimates as to cost. There was, however, one marked difference. The history of architecture down to the present time is grouped in periods, one style of architecture predominating in each period. The architects, although familiar with the architecture that had preceded, were not called upon to work in those periods to the extent that the present day architect must, if he desires to accommodate a large clientele.

The present day architect is supposed to be informed on every period and style. He may be called upon to design a bank or a court house in the Classic, or a church in the Byzantine or Gothic. A college building in the Tudor may, on the other hand, be the whim of some building committee, while a promotor may call upon him for sketches of a casino or amusement park after the style of the Louises or the French Renaissance. Then again there is the changeable home seekers, who demanded an English half-timbered yesterday, want a Colonial today and will insist that sketches after the manner of Wright or Platt be made tomorrow.

Not only must he be able to prepare drawings conforming to the period demanded, but he must be able to present them in a manner that will make his intention clear to the contractor The old country contractors were not confronted with the problems that the contractors have to meet today. Their artisans were familiar with the type of construction of the period in which they were working, with the result that the drawings of the architect did not have to be prepared in the same manner that they are today. The architect and the contractor knew, as well as did the craftsman, the type of construction that would of necessity be employed. They also had a complete knowledge of the details of the period and were oftentimes able to offer such suggestions to the architect which, when adopted, added to the effectiveness of the building. With the different periods there is oftentimes a different method of construction employed, sometimes a type of construction foreign to the experience of the contractor, with the result that the architect must convey to the contractor the exact method to be employed, by detailed and full-size drawings, so that there can be no misunderstanding as to purposes and intent.

When all of these factors are considered, it can be readily seen that the services of an architect are needed more today than at any time in the past, if one wishes to build correctly and to build right.

The status of the architect is oftentimes misunderstood. The architect is a professional man, similar to the doctor and the lawyer. He does not sell plans, but simply uses them to convey his intentions to the contractors.

If you could conceive of an architect possessing the ability to convey the same mental picture of a house to a dozen contractors, a description so accurate that it would give all of the dimensions of every room, number and indicate the sizes of all doors and windows, as well as convey an accurate impression as to the shapes and sizes of all mouldings, you would be able to fully appreciate the fact that the architect is a professional man. The doctor in prescribing for a patient writes out a prescription which remains his property. In much the same manner the architect prepares drawings to assist the contractor in arriving at an idea as to just what the architect proposes to do. As was the case with the doctor, the prescrip-

tion remaining his property, so the drawings of the architect are simply loaned to the contractor.

Another false impression is oftentimes held by the client, who frequently believes that the architect is supposed to be the agent of the owner to the extent that he is to get all he can from the contractor for the owner. The architect is supposed to be impartial, that is, he is supposed to look after the interests of the contractor along with the interests of the owner. He is supposed to be a neutral observer, seeing that the payments, on the part of the owner, are made to the contractor and also supervising the building during the process of construction, to see that the contractor lives up to the agreement made in conformity with the drawings and specifications. —Bungalow Magazine.

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Influence of the Airplane Upon Architecture

ARCHITECTS are aware of the controlling influence already exerted upon residence architecture by the automobile. Those who are applying themselves to a study of city planning problems are forcibly reminded of the absolute dominance of traffic already assumed by the automobile. The necessity of providing parking spaces in the vicinity of public buildings, theatres, hotels, auditoriums, parks, and in the business districts, is making itself felt in all important new work.

The automobile's rapidly growing power of changing preconceived notions could be enlarged upon here considerably, but the present intention is to mention as a reminder another factor now looming up definitely as a further controlling influence of the modern city, and of the buildings of the future. This factor which is to be reckoned with is the airplane.

Six years ago Waldemar Kaempffert discussed the relation of "the flying machine and the roof." At that time the airplane's development had not anywhere approximated its latest achievements, and what was true then of Mr. Kaempffert's discussion of the modifying influence that the airplane of the future would exert upon architecture and the plan of cities, is true today with increasing force. The time is approaching, gradually and not with any degree of haste, it is true, but nevertheless surely, when the question of providing for the flying start, landing, and housing of thousands, tens of thousands, of every-day airplanes will not be an abstraction but a crude reality.

Architects who are interested in the possibilities here suggested cannot too soon begin a study of the problem that will confront planners and designers both, for it has definitely a practical and aesthetic side of which thus far there has been no general attempt at a solution.—Building Review.

* * *

An English Idea of American Homes

Before I came to America I fancied that I should find one long row of apartment houses extending from New York to San Francisco, some of them palatial, but tawdry, others lowly and some squalid, says Lady Inez Stuart in Countryside. This idea was partially formed from reading in your own journals of your lack of home life as compared with our preponderance of it in England. On the contrary, I found in the localities I visited much that we can learn from you Americans of home-making and of home-living. The amazing thing to me is what your women accomplish in the actual building of their homes, and that, too, with small means.

Activity of Washington State Chapter A. I. A.

THE twenty-second annual meeting of the Washington State Chapter, American Institute of Architects, was held January 2, when the following officers were elected: Daniel R. Huntington, Seattle, president; A. H. Albertson, Seattle, first vice-president; George Gove, Pullman, second vice-president; Albert Held, Spokane, third vice-president; Gerald C. Field, Seattle, secretary; Frank L. Baker, Seattle, treasurer. Executive Committee—Charles H. Bebb, James H. Schack, James Stephen.

In his annual address, President C. H. Bebb emphasized the nation-wide scope of the organization and deplored the fact that an Eastern publication had seen fit to suggest a reorganization of the profession in order to make it "a national and truly representative body." "Whatever the faults of the A. I. A.," said Mr. Bebb, "it seems to me the organization is nothing if it is not national."

After thanking the various committees for their co-operation, he sketched the qualifications necessary to an architect, particularly at this critical period of the world's history, in order to effect any betterment in our national architecture. Mr. Bebb said in part:

"An architect must be something more than a designer, or an artist, or an engineer. In addition to his technical training, he must have a broad knowledge of all the sciences and know how to apply them successfully; he must be a good business man, an executive, willing and able to give his services in all matters pertaining to the public welfare. * * * He must be willing to set aside ideas of recognition or appreciation, and compensation must be his least consideration. * * * An architect must understand the trend of the spirit of civilization and have a broad and sympathetic vision of humanity. He must understand the economic conditions of the times in which he lives and their process of evolution. Mr. Vernon Crompton stated that the relation of civilization and architecture is one of cause and effect; the intellectual life or civilization will give the intellectual architecture. Sensuous life will produce sensuous art, and so on. If the architecture of the present time is anarchic, it shows that the civilization of our time has muddled ideas and an irrational way of thinking. An absolute, sound analysis of existing economic conditions, and the causes that led up to them, and the trend of them looking into the future is necessary before we can have a glimmer of hope of finding any betterment in our national architecture.

"It is worse than useless to sit in our offices or meet together and say we are not appreciated, and our work is not recognized. And this idea that we must 'educate the public' should be buried forever. Our own education and a just appreciation of our own shortcomings is necessary before we patronizingly talk of educating the public. A sub-conscious sense of aloofness seems to exist between the architect and the public which must be obliterated. It is for us to come in closer touch with the client, the master builder, the mechanic, and the general public, to render the services we undertake in such efficient manner that the community will thoroughly understand that the architect is indispensable to all building operations.

"During the early part of the last Legislature an attempt was made to pass a State Architect Law. The bill was introduced by J. H. Davis of Tacoma. So much opposition was raised against it that little progress was made and all effort to have the bill passed died down. The Chapter took an active part in the opposition.

"Shortly after our country declared war a number of our members offered their services and that of their offices to the Government. The president and

secretary were called upon to do some confidential work for the General Munitions Board. The investigations and work were done promptly and efficiently and I believe with credit to the Chapter. Late in the summer Col. Stone in charge of camp construction at American Lake, through his assistant, Mr. Alden, asked this Chapter to submit sketches as suggestions to his office for the main entrance gateway to the Cantonment. The Chapter responded with two sketches. Early in October we were asked to submit a list of six men who could fill the army requirements and who would be willing to proceed to France at once in connection with construction of aviation camps, those selected to be commissioned first and second lieutenants. The names of eight men with their qualifications were telegraphed to Washington.

"On August 25 twelve of our members went to American Lake at the invitation of Mr. Alden, Col. Stone's assistant. They were impressed with the lack of architectural study which was apparent on every hand and some consideration was given to the question of the Quartermaster's Corps and other departments of the Government securing the advice and service of competent architects. A telegram was sent to Mr. Wilcox at the meeting of the board of directors of the Institute in Cleveland to acquaint him with the views of the Chapter in this matter and with the idea that he might find an opportunity to present the subject at the board meeting.

"Our Chapter members in service now are Major Somerville, Captain Alden, Lieutenant Sexsmith and Sergeant Cote. Sergeant Sexsmith has been commissioned a Second Lieutenant. The secretary has endeavored to keep in touch with these men. He has originated a monthly news letter, which is sent to them. At our November meeting Mr. Schack was instructed to take up a contribution for Christmas remembrances for them.

"The secretary has had some communication with our Spokane members regarding the proposed Municipal Plans Commission for that city. Nothing of a definite nature has occurred, however.

"During the session of the last Legislature the Chapter became aware that an effort would be made to abandon the adopted Group Plans for the State Capitol buildings. It was not, however, until press reports stated that the Governor had commissioned a Spokane architect to prepare plans for an office building for the Government departments to be located on the old Flagg foundation on which the main Capitol building of the adopted Group Plan was located, that the Chapter had definite information that the Governor intended to abandon the Wilder & White scheme. A history of the Capitol building projects was prepared and cuts, together with some well-worded phrases on the situation, were embodied in a folder, 4,000 of which were printed and sent to all civic organizations, members of the Legislature and prominent individuals throughout the State. The Chapter considered it its duty to care for the State's public buildings and plans in the same measure as the Institute has for many years past watched over the development of the Washington City plans. The question of the abandonment of the Group Plan is not settled yet. The special committee under Mr. Wilcox's guidance has worked very hard and it is hoped that its efforts will be crowned by success.

"In looking forward to the work of the coming year I would earnestly suggest the Chapter giving serious consideration to a system of re-education in the building trades of the disabled soldiers returning from the war. This question has received a great deal of study in England and France from which we could doubtless profit. This Chapter should investigate and initiate a course of study for the men who are physically able to

perform work in these trades. Seattle is the logical place for the location of a school of this kind due to its proximity to the American Lake Camp, where the men will doubtless be mustered out. An opportunity is here offered to lay out a system of vocational training which if properly worked out will have a great effect in maintaining a high standard of workmanship endangered at the present time, because our best craftsmen are entering shipbuilding and munition making due to the small amount of construction work in progress.

"One other matter concerned with the war should receive our attention. England has been flooded with proposed war memorials, soldier monuments, etc., most of them of poor artistic quality, many of them emanate from commercial sources and are of stock design. We will have to contend with this question at no distant date. I have noted in the daily press that a soldier memorial has already been proposed in a Southern California town. We all have seen or heard of the atrocious monuments which disfigure the public squares and commons of small towns and even some of the larger cities in the North and South. It seems to me that steps should be taken to avoid a repetition of soldier monuments of this kind, and I believe an acceptable solution can be found."

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Washington's Capitol and Native Stone

THE State of Washington is planning and constructing a group of capitol buildings at Olympia. Plans have just been completed for the concentration of thirty State departments in a new administration building to be erected on the old capitol foundation, and bids will soon be called for. The State is about ready to award contracts for the completion of the temple of justice, designed by W. R. Wilder of New York. The commission plans to spend approximately $250,000 on this work, and possibly up to $100,000 later for interior finish for the temple, which has been in a state of incompleteness since it was built in 1911. Occupants of the temple are the Supreme Court, Attorney General and State Library. The State has already spent $350,000 upon it.

The proposed administration building will be 268 feet long by 156 feet wide, three stories high above the basement, and it will contain 160 rooms. Its cost, to be paid out of the half mill levy appropriated last winter, will be in the neighborhood of $500,000.

The main entrance on the first floor will be reached by granite steps 52 feet long, and the front will be ornamented by 12 stone columns each 40 feet long. Reinforced concrete is the plan of structure approved, the exterior to be finished in the same kind of stone the commission selects for the outside wall of the Temple of Justice, first of the capitol group buildings to be erected. All State department heads have been consulted by Architect Julius Zittel in planning the administration building for their particular needs and conveniences. The basement, which is above ground, will house the State Fish and Game Commissioner, State printing establishment, Adjutant General, State Hydraulic Engineer, Fire Warden, Hotel and Mine Inspectors, Automobile License Department, laboratory for the Department of Agriculture, and record vaults for the Secretary of State, Land Commissioner and State Auditor.

The Governor's offices are arranged on the second floor, with those of the Secretary of State, State Auditor, Treasurer and Tax Commissioner. The Bureau of Statistics is grouped with the Secretary of State's Department, to

which it belongs, on this department, and the same ruling is followed in relation to the State Auditor and the Bureau of Inspection. The State Land Commissioner, Highway Department, Board of Health, Board of Control, Department of Agriculture, Department of Public Instruction, are to be on the second floor. One-half of the third story is assigned to the State Industrial Insurance Commission. The Labor Commissioner, Industrial Welfare Commission, Bank Examiner, Insurance Commissioner and the Public Service Commission will also be quartered on this floor.

Restaurant and kitchen will be a feature of roof space raised to the height of one story in the center. A room for public hearings will also be provided here, with a laboratory for the State Board of Health and storage rooms for public archives.

Six firms submitted bids last month for the completion of the exterior of the Temple of Justice. These provided for no less than forty-eight different combinations of material. The lowest bid was $197,000 for Boise (Idaho) sandstone and Baring granite base, and the bids on other combinations ranged up to $333,000 for Chelan granite exclusively. The bids varied slightly on whether the demand for the work was to be done in twelve or eighteen months' time. The low bid was on twelve months' time. The combinations were for Wilkeson stone and Index granite; Wilkeson and Silver Lake; Wilkeson and Chelan; Tenino stone and Index, Silver Lake or Chelan granite; Boise stone and Baring granite, or Index, Silver Lake or Chelan granite entirely.

After the bids had been received and opened, the Capitol Commission, in response to demands from various commercial and civic bodies, determined that only material from the State of Washington should be used in the construction. The State Architect was thereupon directed to prepare supplemental specifications to carry the decree into effect. The decision cuts out several contractors whose bids were based on the use of stone from other States. It was reported that Boise sandstone and Haddington Island granite were the low bids, and these were rejected. The stones left to choose from are Wilkeson and Tenino sandstones, and granites from Silver Lake, Index, Baring and Chelan. No figure was given out by the commission as to the limit which has been fixed for the cost of completion of the Temple of Justice.

It will surprise no one that the State's irrevocable decision to use only native material immediately resulted in a decided increase in the estimated cost of the proposed building. The Tacoma Commercial Club sent a telegram to the Governor to insist upon Washington State materials and asserted that stone could be obtained in the State superior to outside stone. In his answer to this communication, Governor Lister said:

"The entire commission is favorable to the use of local materials but has become discouraged in its attempt to adopt the same, when we find that the owners of the Wilkeson quarries are increasing the price on their stone just at the time when the State calls for bids on this work. If the price quoted by the owners of the Wilkeson quarries on stone for this work had been the same as list prices quoted not less than thirty days ago, the reduction in the cost of this work would amount to between $15,000 and $20,000, compared with the present bid. Do you consider the owners are giving proper encouragement to the use of their local material? I suggest the proper line of action for the Commercial Club, in connection with a matter of this kind, would be to investigate the prices quoted by the owners of local material in comparison with the quotation covering material of like character, or better, given by others. Properly handled, there is a great possibility for the use of Wilkeson stone, but under the method now being pursued by the owners there can be but little hope for its use in the future."—Stone.

Architects, Engineers and Draftsmen Can Do Their "Bit"

ARCHITECTS, engineers and draftsmen are called upon to render an important service to their country. When the workman has finished with the piece of cotton or linen cloth used in his trade, it is flung aside to be destroyed. The Red Cross is asking now for that discarded material. All over the country thousands of women are earnestly engaged in the manufacture of surgical dressings to be used in the hospitals for our wounded soldiers and sailors. The problem of getting enough white goods for this work is enormous. As long as the war goes on the work must continue if we are to live up to the humanitarian ideals typified to the world today by the Red Cross.

Two kinds of cloth are available—draftsman's tracing cloth and old linen and cotton articles to be donated from private households and, often in large quantities, from hotels. These can be easily collected and handled by the modern laundries, which have now been called upon to perform this work for the Red Cross. With their facilities for collecting washing, sterilizing and delivering to the local chapters, the laundries are in a position to perform an invaluable service and the least that other trades can do is to help them in every way. If any manufacturer, architect or draftsman will go to the slight trouble of calling up either the local laundry owners' association or one of the large laundries of his city, he will find them only too glad to send for such cloth as he can give them.

These materials the laundry will handle with the greatest possible care, because, as the National Laundry Journal for December 15, 1917, says: "Remember it is a matter of life and death—first that you do this work and second that you do it right."

Taking up the task, therefore, in such a spirit, the Journal goes on to give the practical details for treating this draftsman's cloth:

"Some of the tracing cloth is thin linen fabric and some is thin cotton, but whether it is linen or cotton makes no difference in the washing process. The cloth has been treated with a gelatinous dressing, to make the material take ink, and at the same time be transparent. The dressing seems to resemble starch that has been ironed in the goods, in that it is softened by water, but does not completely dissolve and come out and leaves no trace of stiffness in the goods. As the goods are to be used as surgical dressings, it is desirable that no starch remain and that the goods be as soft as possible. This end is best attained by the use of malt extract, or diastase, which is an inexpensive starch solvent. A short breakdown of malt extract, which is familiar under manufacturers' trade names, at a low temperature will remove most of the drawing ink and at the same time take out all of the dressing that is in the tracing cloth. Those who have not the malt extract at hand will be able to do this work by use of a cold rinse, followed by a hot suds, but the goods will not be as soft as when the malt extract is used. The goods should be given a fairly strong bleach, followed by a sour, to remove the trace of bleach that may remain. Then there should be a good rinse, to remove every trace of the sour. The bleach will completely sterilize the goods; hence a boil is not necessary.

"The goods should be extracted as usual, after which the material should be put through the drying tumbler, if one is available, as then the pieces will be soft and pliable. If a drying tumbler is not available, the pieces may be put through the flat work ironer. If it should happen that

some drawing ink remains on a piece, it should be put aside and laundered again with another lot of white goods. Tests have indicated, however, that ink comes out almost entirely with the wash and the bleach."

The greatness of the demand for old linen and cotton cloth is being measured up to by the willingness of the laundries to take over this work. Be sure, then, to notify them if you have any of this much-needed material. Your promptness to respond to this call may, in sober earnest become a matter of life or death to some of our wounded men across the sea.

* * *

No Fees for a Building Erected Illegally

THE supreme court of Pennsylvania has ruled that an architect is not entitled to compensation for preparing plans and specifications for a building of a character forbidden by law. This point was decided recently in the case of Medoff vs. Fisher et al.

The plaintiff brought suit to enforce payment for services for preparing plans for a building to be used as a moving picture theater and partly for stores and dwelling apartments, with a public bathroom in the basement. He was denied the right to recover because the building would infringe on the statutes of the state of Pennsylvania, which prohibits the occupation of any portion of a building in cities of the first class, as a dwelling or department store, when the building is designed to seat 500 or more as a moving picture theater.

The court held that one who holds himself out to the public as an architect is particularly charged with knowledge of the regulations and restrictions governing the erection and use of buildings.

"We must assume both the plaintiff and defendants knew that the uses to which the latter contemplated putting the proposed structure were forbidden under a criminal penalty by the statutes of Pennsylvania," reads the opinion in the case. "Thus, it may be seen, we have the plain case of three men, the defendants, intending to do a forbidden thing, employing a fourth, the plaintiff, to assist them in making plans to carry out their unlawful purpose—in other words, a combination which could be indicted as a criminal conspiracy. Of course, no contracts or engagements entered into under such circumstances will be enforced at law."

* * *

Big Construction Program to Follow the War

Investigation by New York City committees of building trades has revealed that more than $5,000,000,000 will flow into projects through the United States in the rebuilding of Europe during the five years after the end of the war.

A large part of the reconstruction will be done by organizations in this country. France is negotiating already for more than $150,000,000 outlays in the reconstruction of her devastated cities. Orders from both France and England are pouring into the National Lumber Manufacturers' Association, which reports that in one English city—Birmingham—50,000 houses of the frame type ought to be replaced at the earliest possible moment, the community needing from 10,000 to 20,000 more houses at once. The proposed rate of construction is to be 5,000 houses a year, the entire programme calling for nearly 2,000,000,000 feet of American timber. The town council is preparing to handle operations which will involve $6,250,000 annually.

Concrete Houses*

By HARVEY WHIPPLE and C. D. GILBERT

EVERY home builder benefits by the accumulated experience of others, as expressed through his architect and his builder. Equally he is the loser by that experience which holds to traditional methods and materials long after better things are obtainable. This conservatism, coupled with a mental laziness that resists the effort required to develop new ideas, is chiefly responsible for the slow development of the fireproof house.

The percentage of houses in which concrete is the principal structural material has been so small that the man who builds a fireproof house is looked upon in most localities as a curiosity and his work as a kind of dementia.

Those best able to advocate the better dwellings and to make them successful—the architects and the builders, as a class—have been so wedded to traditional materials that their opposition can generally be counted on to discourage the layman who has the foresight and the temerity to believe that a better house should be secured for the money he is about to spend under presumably expert direction.

This condition is deplorable from the standpoint of loss to individuals and to the community, by the persistance of burnable houses, with their attendant evils of constant painting, repairs and depreciation.

It is regrettable, too, because not a few concrete houses have been the work of men whose zeal and appreciation of concrete have not been coupled with an equal appreciation that care in construction must be combined with architectural training, so that full advantage may be taken of the inherent excellence of the plastic stone. Their lack of experience too often resulted in dwellings whose raw crudeness showed concrete at its worst. Its inherent beauty was lost. Thus has come about the perpetration of numerous monstrosities calculated to substantiate the statements of those who prefer to work with other materials.

Concrete Design, Not a Masquerade.—It is the outstanding fault of numerous houses of concrete that they are both uneconomical and unconvincing, from an architectural standpoint, because they are frame houses or brick houses masquerading in another, radically different material.

When concrete is to be used the designer should think in terms of concrete, from footing to parapet, and the ideas of our traditional tinder boxes and all their component factors should be cast to the winds. Do architects and builders as a class never feel the need of new worlds to conquer?

It is true that concrete houses of conventional plan and elevation can be built, but always at an undue expense. It is equally true that in the treatment of the elevation there is great opportunity to take advantage of the plastic and fire-resisting qualities of the material economically by

* From the Annual Housebuilding Number of Concrete. Illustrations are from drawings by Glenn M. Rees, architect of Rochester, N. Y.

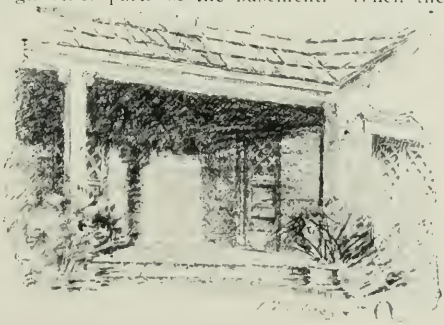
departing from the house architecture familiar in America.

It is not necessary that the architect create such designs in their entirety—he has for his inspiration the wonderful work of the finest Italian periods, he has the architecture of the Orient and he may gain suggestions from the work of primitive peoples. Our own best colonial work is not without inspiration to the designers of concrete dwellings.

While most house builders will prefer a compromise, utilizing concrete where its advantages are most obvious and other materials where convention or personal taste dictates, there is much to be said for the use of concrete as the major material throughout the house, with only enough of other materials to add the needful decorative touch. Such full use makes for economy, since it permits fuller employment of mechanical helps and less dependence on numerous trades. An investigation of the individual problems of concrete house construction discloses certain outstanding facts that apply to individual parts of the structure.

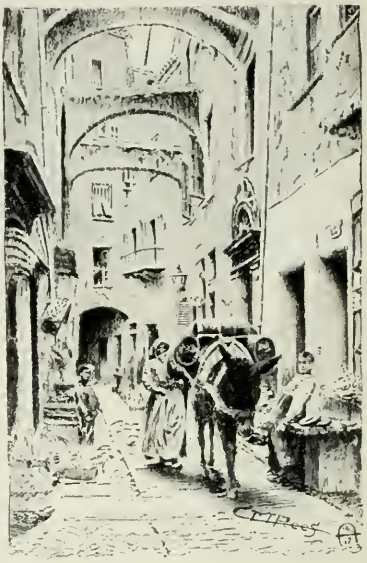
Footings and Basement.—Concrete is obviously the best material for foundations. Water-proofing should be used for basement walls and floors where drainage conditions require. Insulation and damp-proofing considerations make desirable an air-spaced wall by the use of hollow blocks, double walls or furring. Building codes are notoriously deficient in their provisions, often requiring concrete house walls of excessive thickness and not providing for insulation by air-spacing.

In the modern house basement, space is too valuable to waste, and provision should be made for laundry, shop, amusement rooms, and so on, in accordance with the occupants' requirements. Comparatively small expense will add desirable rooms that may be dry, well lighted and attractive. The heating plant should be separated by solid walls from the rest of the basement, and the coal storage preferably provided under a porch. This will confine most of the dust, especially if ashes can be removed without going through other parts of the basement. When the partitions are also the bearing walls that are the most economical support for floors, the expense of division is little, if anything, extra.



House Walls. — Much latitude is possible in wall construction, which may be of the unit or the monolithic type. The bogy of dampness with concrete walls is dispelled when given intelligent

thought and honest work. In dry climates, without extreme ranges of temperature, solid walls of reasonable thickness are probably satisfactory, but in general the excellent qualities of concrete should not be called upon unreasonably to give immunity from the enforcement of natural laws. Solid walls may be water- and damp-proofed. Even this depends too much on the personal element to be dependable as a general rule. Temperature and atmospheric conditions take little account of workmanship, and the solid wall will be a conductor of heat, and cold walls will condense moisture from saturated air, regardless of their structural material.



CONCRETE WALLS AND TIE ARCHES BUILT IN 10TH CENTURY

The necessary insulation is provided by air spaces within the wall or may be secured by the application of furring and lath to solid walls.

Wall construction divides sharply into unit and monolithic classes. Of the first the common hollow block is the best known and has through its use by unskilled builders done much to discredit the use of concrete units. As distinguished from the muddy textured rock face "block," the modern concrete "stone," well proportioned, skillfully made and "set," combines the beauty of natural stone with the economy of a manufactured product.

Insulation is most effective when the unit is so designed as to leave the protecting air space as free from concrete as possible. Indeed, a type that gives two entirely separate walls, bound by metal ties, is used satisfactorily where furring and lath are omitted. Some progress has been made in the use of large precast units, in general cast hollow, but their use is practicable only in the construction of groups of houses, where erection facilities are at hand. In such work their great possibilities have barely been touched.

The present tendency is toward building house walls of rough concrete units of ample strength, but with no suggestion of finish, presenting rough faces as an ideal surface to receive plaster and stucco finishes. This method has the great advantage of low cost units made on a large scale, to be erected as desired and to receive a variety of finishes already made popular in spite of the abuse of the stucco house idea with work done on unsuitable plaster bases.

Monolithic walls can be so cast that on removal of forms a finished surface, or a surface that can be finished without stucco, is produced. Very beautiful results have been obtained in this way. A rustic effect may be desired, or form marks may be acceptable as honestly expressing the

material used, or special care may be taken in making the forms, or special facing mixtures may be used, or the surface may be brushed, tooled, bush hammered or rubbed—by taking a discriminating advantage of any one of numerous ideas for the surface to be obtained, the builder has a latitude for his taste and for his purse which few, if any other, materials make possible.

Unless, however, the preference is for a bold and somewhat rustic effect, the special form work or special facing mixtures or subsequent treatment on a wall whose surface is monolithic with the structure, will cost no less than for a rough wall finished smooth or rough with any one of several popular stucco treatments.

The difficulty of producing thin, double, monolithic walls by placing the concrete in deep forms is very great and has led to the introduction of double wall machines, the work of which may be compared to the laying of rough wall units, since the machine travels along the wall building double or triple reinforced walls. The simplicity and flexibility of the equipment is noteworthy and the results, in competent hands, are of unquestioned quality, presenting a perfect plaster base, to which stucco can be applied economically. Unit, steel, pan-like forms are used with success by some builders to construct solid walls, while the use of lumber for forms is still quite general, chiefly, perhaps, for the reason that our builders are mostly graduate carpenters, or carpenters at heart, or yet, in fact, in whom the use of boards is a tradition not to be discarded lightly.

Floors.—The value of fireproof structural floors for residences is coming to be recognized, and they are now being used in many of the better houses, even where concrete is not used for walls.

The expense is not prohibitive, if the owner is willing to consider the use of the concrete floor without an expensive surface flooring. The man who builds a house without too rigid economy, may choose terrazzo, tile, cork carpet, etc., but for the less expensive house a well finished concrete floor can safely be recommended as highly desirable, in spite of popular prejudice against it. The criticism that such floors are cold is not founded in fact, where modern heating systems are used. The addition of furnishings removes the bare look associated with concrete, as seen in basements and factories.

Indeed, the floor in its natural condition is not found objectionable by some, but it is susceptible to treatment with paint or with stain, varnish and wax, to meet practical and decorative requirements. Neutral textures—a lack of high polish—are readily attained in concrete, and they enlarge the apparent area of small rooms and display to better advantage the rugs, furniture and decorations, while the sanitary qualities of the concrete floor are unsurpassed.

The advent of the vacuum cleaner has apparently turned the thought of decorators back to all-over carpets, in which there is exhibited a renewed interest. Concrete floors with tacking strips would provide an ideal base for carpets.

Structurally, the concrete floor is simple and economical. The flat slab with one or two-way steel is probably desirable in some cases, because

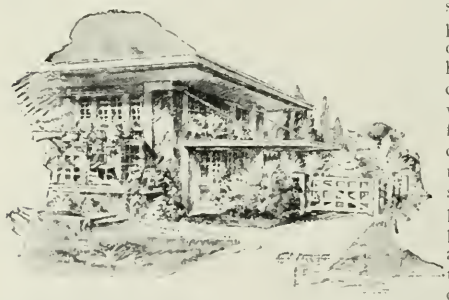
of its simplicity and because it permits flat ceilings without further treatment. A more economical floor can often be built by the use of steel pans or wood forms, giving a ribbed floor that requires less material. This construction is desirable for the first floor, and for situations requiring a suspended ceiling, and could well be used throughout in very low cost houses, where the beams could be left exposed. With carefully studied combinations of beams and slabs, this construction could be adapted to the principal rooms of large houses. For isolated houses, where the unlikelihood of its reuse does not warrant form investment and where flat ceilings are desirable, the tile and joist floor is probably the most practical solution, because of the small lumber waste and the small amount of skilled labor required in the construction.

The Roof.—It is the roof that gives the designer of concrete houses at once the most trouble and the greatest opportunity. The characteristics of concrete are not easily adapted to a domestic architecture whose thought for 300 years has been of wood. The steep pitched roof is adapted to easy construction in wood; it is picturesque and has unquestioned architectural charm. As before intimated, the architect has new worlds to conquer. It becomes a matter for the owner to decide and for his architect to create. Is the home builder to have permanence and fire protection, together with economy and possibilities for new usefulness that the flat roof offers, or must he forego these because his architect is unresourceful?

The inherent qualities of a material and the economic necessities incident to its use are at the beginning of the architect's problem. He cannot ignore them; he should not misuse them. He should find inspiration in availing himself of structural qualities and economic necessities and molding and shaping them to serve an aesthetic as well as a practical purpose.

He is not without precedent. He does not stand alone. He may take courage among the flat roofs of old Salem and Newberryport; he may be cheered at Mount Vernon and spurred to his task by the missions of California.

The design of small, moderate-sized, flat-roof dwellings involves a study of proportion and an adaptation of carefully considered detail, but the difficulty should be accepted as a worthy challenge. The problem requires skill for an attractive solution. Much can be done with wide cornices and suitable treatment of parapet walls and with windows and entrances. Some home builders who appreciate fireproof construction will undoubtedly still prefer the pitched roof, and if covered with fire resistive material a very safe construction can be secured, particularly if there is the protection of a concrete attic floor. Concrete roof tile are probably the least expensive roof covering of pronounced architectural value—with color and texture—and they combine well with stucco walls.



The true concrete roof will be approximately flat. It may be pitched slightly to the outside, but common sense again reverses the conventional method of disposing of roof water and pitches the house roof inward to

one or more sumps, as in industrial buildings. The advantages are obvious, as gutters and down-spouts are always expensive and are prolific sources of trouble. Disposing of water through a center conductor reduces trouble possibilities to a minimum. The warmth of the house serves to keep the sump open at all times.

A statement that no roofing material is needed on a properly constructed concrete roof slab will be considered radical, yet such roofs of an area that would cover the average man's house have long been in successful use. Means are at hand for providing joints where needed. If properly constructed, there is little danger of leakage, and even should temperature stresses eventually cause cracks, repairs are easier than on most roofs. A few inches of sand or earth covering would almost certainly prevent trouble from cracking of properly reinforced roof slabs. Where land is limited, such roofs open wonderful possibilities for roof gardens and playgrounds.

Trim.—There are satisfactory metal window frames, sash and metal doors, but their cost will prevent their extended use in house construction. Desiring fireproofness, most of us will still refuse to give up the beauty of wood trim. Window frames may be of the familiar box type, and economy of wood at no increased cost is secured by the use of spring balances for double hung windows, while casement sash require a minimum of frame.

Inside of the house much can be done to eliminate combustible material. Individual taste may demand paneling or extensive window and door trim, and in matters of one's personal taste there should be no argument. It is well to consider, however, if as desirable effects cannot be obtained in other ways. For instance, in most houses, much material and time are used to put more or less elaborate trim around window and door openings, trim which always must be cleaned and refinished; yet when window hangings are in place the wood wall trim is scarcely seen. An inexpensive hollow metal trim is now to be had that is applied before the plastering is done and finishes the plaster against the frame in a neat and substantial way. Some will find such trim around openings restful by comparison with the over-trimmed and molded openings so much used.

Where concrete floors are used the concrete is turned up with a cove at the floor angle and meets the wall plaster either flush on a metal screed or with a slight projection.

Decoration.—In combination with stucco, the decorative possibilities of the exterior are unlimited and stucco houses everywhere built offer suggestions. It should be remembered as a first principle that concrete and plaster are unexcelled as backgrounds for the work of nature. The designer of a concrete house should never lose sight of this fact, and should take full advantage of it. The plainest house, if reasonably well proportioned, can in a few years be transformed by trees, shrubs, vines and flowers. If, in addition, judicious use is made of a few brick and tile for warmth of color, and a few boxes of evergreens for contrast with walls, the effect is then perennial.

* * *

The cost of building has advanced tremendously in the last twenty years. Probably the first man kicked about it, too, after he had moved from a cave to a cabin.

A lot of fellows fail in life because they have plans but no specifications.

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Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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T. C. KIERULFF - - - *Legal Points*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. LII. FEBRUARY, 1918 No. 2.

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WHY STAGNATE THE BUILDING INDUSTRY?

Secretary McAdoo's published statement advising a cessation of home building till after the war has provoked not a little criticism from those who will be directly affected by a further stoppage of construction work. It is claimed that such drastic action as urged by the Secretary would hinder rather than help the prosecution of the war, because it will prevent earnings which could be devoted to the purchase of Liberty Bonds. Were there a scarcity of materials and men there would then seem to be some excuse for Mr. McAdoo's request, but so far as apparent the government's interests are not being hampered by the prosecution of the small percentage of normal building, outside of war construction work. The fact that the building records on the Coast show a falling off of over 60 per cent should appeal to those in authority and help them to realize that the industry has already suffered probably more than any other in this country since the beginning of hostilities.

The man power and machine power which would be employed in home building is not fitted for and is not employed on Government war work to any great extent. It is mostly not of draft age. To the extent that the Government can use such men and machinery the Government gets them. What is not needed by the Government should be doing its regular work and earning money, thereby keeping our building industry alive.

ARCHITECTURAL ADVERTISING

We quote from a recent report of the Committee on Publicity of the Illinois Society of Architects:

"It is a well known fact that our daily papers depend upon their advertisers for financial support. Architects as individuals are not advertisers. Then why should the press publish items or opinions from a class of business men who do not contribute directly to its

support. They should not any more than we should render free services in preparing preliminary plans. No one places value upon an architect who distributes free sketches, pretty plans and pictures to all who may desire them. Neither does any one value the opinion of a paper that renders free advertising for the asking. The best papers no more advertise without compensation than the best architects render preliminary sketches and perspectives without compensation."

The Illinois committee goes on to suggest a plan of advertising which it believes to be along ethical lines. As a society it would purchase space like business men and "help to educate the public to the advantages of employing an architect."

It is claimed that the money now expended in sketches could be placed into a general advertising fund by individual architects with excellent prospects of reaping something attractive on the investment.

San Francisco architects always have been wary about advertising and it is not an uncommon thing to hear them complain about the ungrateful daily papers that solicit photographs and perspectives and in publishing the pictures fail to give the architect proper credit.

COST OF BUILDING MATERIALS AFTER WAR

One of the leading building-trades publications in France, Le Batiment, contains an interesting study of the probable cost of building materials in France after the war. The author opposes the view, sometimes expressed, that the prices of materials may be expected to return to approximately the level of 1914. He states that a simple examination of the underlying causes of present high prices is sufficient to indicate future tendencies. The increased price for stone and sand, raw materials extracted directly from the soil, is due to the increased cost of labor and of fodder for traction animals. The increased cost of labor will not disappear, for there have been no examples in the past of an average decrease in wages coinciding with an increased demand for labor. After the war the demand for labor will be urgent and there is likely even to be an increase in various categories of labor.

Banquet to Mr. Arthur Brown, Jr.

By CHAS. PETER WEEKS, Architect

On the evening of January 29th, at Bergez-Frank's restaurant, the San Francisco Chapter of the American Institute of Architects tendered a farewell dinner to Mr. Arthur Brown, Jr., of the firm of Bakewell & Brown, who has since departed for the East to take up his duties as Lecturer on Design at the Harvard School of Architecture. This banquet was arranged by Mr. Wm. H. Crim, Jr., chairman of the Entertainment Committee of the chapter, and was attended by about sixty members and guests.

Mr. Clarence Ward was toastmaster of the evening and brought out most successfully the pleasanter sides of Mr. Brown's professional association with the local men, although there was an undercurrent through it all of deep personal appreciation of Mr. Brown's ability and regret at his departure.

The following speakers were called upon by the toastmaster:

Mr. John Galen Howard welcomed Mr. Brown into the fold of Pedagogy.

Mr. Jack McGilvray recalled his association with the firm of Bakewell & Brown while executing the City Hall, as did Mr. Geo. Wagner.

Mr. Tommy Ross and Mr. Wm. Grey outrivaled Harry Lauder.

Mr. Willis Polk, contrary to the fear of all, did not resign from anything nor refuse to concur in the opinion of the majority, but made it the occasion to renew his oldtime brilliancy of humor and repartee.

The other speakers were Mr. Louis C. Mullgardt, Mr. John Bakewell, Jr., and Mr. Harry Michelsen.

An orchestra of local talent furnished excellent music.

There is no one in the profession who is more greatly admired or better liked than Mr. Arthur Brown and added success is the wish of all his associates.

Remodel Old Buildings

The Washington State Chapter, A. I. A., has taken an active interest in the subject of housing the industrial workers who are coming to Seattle. At a recent meeting a definite program was outlined and the following recommendations were made:

That the Chapter adopt the slogan, "Remodel and care for one or more additional families in buildings already existing." About fifty architects of the

city will give to owners free advisory service. The architect will go with the owners and inspect their buildings as to the feasibility of remodeling them to care for one or more additional families, and provide them with an estimate of the approximate cost. If the owner wishes further service of the architect, the latter shall provide such services at five per cent of the cost of the work, which is one-half the regular fee for alterations. The offer of free services will remain open only until March 1.

Mr. D. R. Huntington, president of the Chapter, in his address said, "It is hoped that this drive will open the way for hundreds of owners to place unprofitable buildings in the profitable class. The remodeling suggested offers splendid returns; it opens a field for conservative, safe and moderate investment which will help to meet the present emergency."

Gould Endorses Concrete Ship

Mr. A. Warren Gould, well-known Seattle architect, is much interested in the building of a concrete ship at Redwood City, and is full of enthusiasm over the use of concrete for ship building. He predicts it will revolutionize the construction of ships for commercial purposes.

The major portion of Mr. Gould's time during the past few months has been spent at Mt. Angel, Ore., where he is installing a plant for the manufacture of "natural fireproof lumber." This is a new natural product that will be put on the market this year, which he claims will be a strong factor as a building material of the future.

Speaking of the work at Mt. Angel, he said, "If nothing goes awry we expect to be in good running order by the middle of April, to supply the market, and the outlook is very promising. I am constructing a motor truck road direct to the quarry, and will do all the hauling from the quarry to the plant with trucks and trailers. The plant is located at Mt. Angel, and is served by two lines of railroad, affording splendid shipping facilities."

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Recent Work of Messrs. Weeks & Day

Plans have been completed by Messrs. Binder and Curtis, architects of San Jose, and Messrs. Weeks & Day of San Francisco, architects and engineers, for a vaudeville theatre building at San Jose for the Southern Development Company. The building will be of reinforced concrete and will seat 1800 persons. More than $100,000 will be expended on the improvements. Besides the San Jose amusement house Messrs. Weeks & Day have been doing quite a little theatre work of late, including the remodeling of one of the oldest play houses in Fresno. This building has been completely modernized with an attractive new front in keeping with the general movement in the Raisin City to improve the appearance of all down-town property.

In chronicling some of the recent work of Messrs. Weeks & Day, opportunity is here taken to correct an unfortunate error in the January Architect and Engineer. In illustrating the new country home of Mr. H. T. James, at Burlingame, Mr. Chas. Peter Weeks alone was credited for having designed the house, when such credit properly belonged to the firm of Weeks & Day, who were jointly concerned both in planning and building the house.

Architect for Reserve Bank

Mr. George W. Kelham, architect of the American National Bank building, under construction in San Francisco, and of the Farmers & Merchants Bank building recently completed in Stockton, has been selected as architect of the Federal Reserve building to be erected in San Francisco. In connection with the naming of Mr. Kelham for the work, it may be said that the final choice for the commission lay between Messrs. Bakewell & Brown and Mr. Kelham, and it is not at all unlikely that in the final analysis Messrs. Bakewell & Brown may be called as consulting architects by reason of their very excellent work in the San Francisco City Hall. The P. J. Walker Company will act under the direction of Mr. Kelham as managers of construction.

Hawaiian Renaissance in Architecture

(From the Improvement Bulletin.)

Hawaiian Renaissance, whatever that may be, is the latest development in architecture. It is to be employed in designing a group of commercial buildings to be erected in Honolulu, the first seven of which will cost $3,000,000. Louis Christian Mullgardt, architect of the Court of Ages at the Panama-Pacific Exposition, has been commissioned to design the buildings. That the Hawaiian Renaissance will be a unique and artistic creation goes without saying, for Mr. Mullgardt is gifted with a splendid imagination and the tropical lure of the quaint Pacific islands should furnish abundant inspiration.

Pasadena Architects in U. S. Service

Mr. Hubert Frohman, of the firm of Frohman & Martin, Pasadena, has enlisted and is now in the engineering branch of the Ordnance Department at Washington. His work in this branch of the service will be the preparation of plans for arsenals and other structures.

* * *

Mr. William E. Murphy, associated for several years with Mr. Louis du P. Millar, Pasadena, in the practice of architecture, has enlisted in the army, and is now at Fort McDowell, Angel Island.

Engineers Have Much Work

Messrs. McDonald & Kahn, construction engineers with offices in the Rialto building, San Francisco, have approximately $2,500,000 of work under construction or being planned, including the following:

Spencer Kellogg plant, Oakland	$1,000,000
California Raisin Growers' factory and warehouses, Fresno	1,000,000
National Paper Products Company, Stockton	500,000
Buildings for the Associated Oil Company, San Francisco	200,000
Building for O. H. Greenwald, San Francisco	35,000
Garage for Walter H. Sullivan	35,000

May Our Guns Never Become Powderless

The Architect and Engineer, as a rule, modestly refrains from publishing contributions in verse, leaving this form of reading to the magazines of fiction and romance. But we are compelled to make an occasional exception, and while the following jingle has no particular bearing on architecture, it is in keeping with the times and about the best we have seen since the grim old war began. We are only sorry that the clever author is anonymous, the verse having been handed to us by a contractor who could not recall the writer's name:

My Tuesdays are meatless,
My Wednesdays are wheatless,
I'm getting more eatless each day;
My house is all heatless,
My bed is all sheetless,
That goes to the Y. M. C. A.
The bars are all treatless,
My coffee is sweetless,
Each day I grow older and wiser.
My socks are all feetless,
My pants are all seatless,
By gosh, how I do hate the Kaiser!

Much Store Front Work

All the San Jose architects are busy on store alteration work, due to the changing over of many saloons which were closed by the recent no-license vote.

Messrs. Wolfe & Higgins have designed a new front for the Clayton building, to be occupied by Becker's cigar store. The finish will be gum. The same architects will repair and put in new fronts to the George House Clothing store on First street; also they are making plans for new fixtures and store fronts in the Bank of San Jose building for Rider's Jewelry store. They are also making plans for changing the Pomeroy building in Los Gatos, same to be occupied by the postoffice.

Mr. Chas. S. McKenzie, Bank of San Jose building, San Jose, is making plans for alterations to the ground floor of a building on Second street, same to have new store fronts and fixtures, the work to cost in the neighborhood of $15,000.

Stockton Apartment House

Mr. Ralph P. Morrell of Stockton has completed plans for a $60,000 apartment house to be erected at Magnolia and Hunter streets, Stockton, for Mr. W. H. Bennett of that city. Building will be three stories and constructed of hollow tile, with asbestos stucco exterior. There will be twenty-four apartments of two and three rooms each.

Concrete Factory

Plans have been completed by Mr. Wm. Knowles for a two-story concrete factory, 95x112 feet, to be erected at Shotwell and Nineteenth streets, San Francisco, at an approximate cost of $35,000.

Designing Small Town

Plans are being prepared in the office of Mr. G. A. Applegarth, Claus Spreckels building, San Francisco, for laying out a town site near Bay Point, Contra Costa county. Here workmen's cottages, store buildings, theatre, etc., will be constructed for the accommodation of the employees of the Pacific Coast Shipbuilding Company, whose $500,000 plant is now being built on Suisun Bay, from plans by Mr. Frederick H. Meyer.

Los Angeles Wholesale Building

The Wurster Construction Company, 802½ Central street, Los Angeles, has been awarded the contract for the construction of a six-story and basement class "A" wholesale building, 100x650 feet, at Seventh street and Central avenue, Los Angeles, for the Los Angeles Union Terminal Company. Mr. John Parkinson, Title Insurance building, Los Angeles, is the architect.

Apartment House

Mr. C. A. Langermann, of 2289 Fifteenth street, San Francisco, has had plans prepared by O'Brien Brothers, San Francisco architects, for a two-story and basement brick and concrete apartment house to be erected on Dale Place, between Leavenworth and Hyde streets, San Francisco.

San Jose Bank Alterations

Plans have been prepared by Mr. Clarence A. Tantau for alterations to the ground floor of the old Safe Deposit Bank building at First and Santa Clara streets, San Jose. This bank was recently taken over by the Bank of Italy. Later on a new bank and office building will be constructed on the site.

Recent Work of Mr. W. H. Weeks

In addition to his usual run of school work, Mr. W. H. Weeks reports plans on the boards for a Carnegie library at Yolo, an apartment house at Twenty-first and Howard streets, San Francisco, for Mr. Mathews of Eureka, and a concrete garage and hotel at Watsonville for Mr. J. F. Jefsen of that city.

Oakland Store Building

Mr. William M. Grenner will build a one-story brick store building at the junction of Broadway and Piedmont avenue, Oakland, from plans by Mr. Clay N. Burrell. The building, covering an area 100 by 110 feet, will cost $15,000.

San Jose Department Store

Preliminary sketches have been made by Mr. Warren Skillings, a San Jose architect, for a five-story class C department store building to be erected at Santa Clara and Market streets, San Jose, for L. Hart & Sons.

San Francisco Warehouse

Plans have been prepared by Mr. W. H. Ratcliff, Jr., Berkeley architect, for a four-story and basement brick warehouse, to be erected at Spear and Mission streets, San Francisco, for Mr. George E. Billings. Construction will be of brick, the building to occupy a ground area 45x137 feet, and will cost approximately $45,000. Mr. Ratcliff is also preparing plans for a $12,000 residence and garage in Crocker Highlands for a client whose name is withheld for the present.

Contract for Courthouse Grounds

MacRorie-McLaren Co., 141 Powell street, San Francisco, have been awarded the contract at $15,961 for laying out the grounds surrounding the new county courthouse at Woodland. The contract includes furnishing several hundred trees and shrubs, laying cement walks, construction of concrete fountains and seats and putting in a grass sprinkler system.

Fresno Masonic Temple

Mr. Carl Werner, Phelan building, San Francisco, is completing the working drawings for the proposed Scottish Rite Cathedral to be erected at Olive and Van Ness avenues, Fresno. Plans will be sent out for bids probably inside of another month. Building is to cost between $100,000 and $200,000, and will be Class "A".

Plans for Pebble Beach Lodge

Pebble Beach Lodge, which was destroyed by fire Christmas night, will not be restored on lines similar to the building burned. Instead of using the rough logs, construction will be of cement plaster on the outside and a portion of the building will be two stories to accommodate about twenty guest rooms. The new building will be closer to the ocean. The plans are being prepared by Mr. Lewis P. Hobart.

Sperry Flour Plant, Stockton

Mr. Joseph Losekann, architect of Stockton, writes that he is working on several different layouts for the Sperry Flour Company, which intends to improve its Stockton plant in the near future. He states, however, that nothing definite has been developed and that the company is undecided as to just how much building it will do this year.

Building Inspector Resigns

Mr. W. B. Rohl, building inspector for the city of Sacramento, has resigned to accept a position as superintendent of construction of the new Masonic Temple under construction in the capital city, from plans by Mr. R. A. Herold.

Personal

Mr. Will Sterling Hebbard, architect, announces the removal of his office from the Grant building to Suite 1106, American building, Fifth and Broadway, San Diego.

Mr. Robert D. Farquhar, architect of Los Angeles, and who served on the jury in the recent State building competition, has closed his office in the Van Nuys building, and discontinued the practice of architecture for the time being.

Mr. Harris C. Allen, a well-known Berkeley architect, whose address up to recently was 2514 Hillegass avenue, is now a captain, Aviation Section, Signal Corps, United States Army, with headquarters at Kansas City, Mo.

Theatre for Richmond District

Messrs. Reid Brothers, the San Francisco architects, are completing drawings for a high-class moving picture theatre to be erected at Ninth avenue and Clement street, Richmond District, for Mr. Samuel H. Levin. The building and equipment will cost $100,000 or more

Shipbuilding Plants to Be Doubled

Both the Union Iron Works and the Moore & Scott Iron Works have announced that they will double the size of their Alameda and Oakland plants at once. Plans for the Moore & Scott buildings are being turned out by Mr. Leland S. Rosener, C. E., of San Francisco.

New Officers of S. F. A. C.

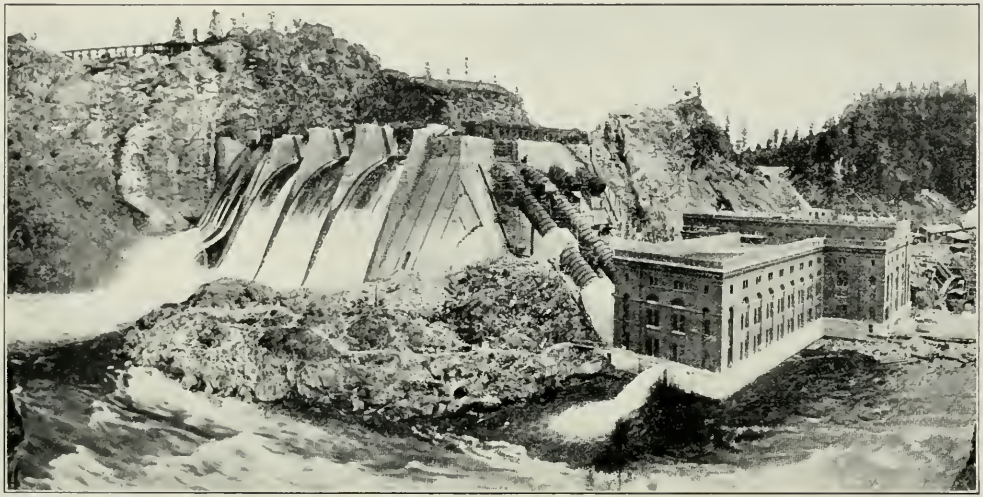
The following are the new officers of the San Francisco Architectural Club: President, John F. Beuttler; Vice-President, Edward Flanders; Secretary, Harry M. Michelsen; Treasurer, Leonard F. Starks; Directors Edward Eames, Louis M. Cohn, and J. S. Cole.

Jacklings to Build at Hillsborough

Plans are being prepared by Messrs. Willis Polk & Company, Hobart building, San Francisco, for a country house at Hillsborough for Colonel Daniel C. Jackling. The house and garden features will represent a probable expenditure of $200,000.

Brick Store Building

Messrs. Heiman-Schwartz, 212 Stockton street, San Francisco, have completed plans for a one-story brick store building to be erected on Bush street near Jones, San Francisco, for Mr. A. Aronson, and to cost $12,000.



THE LONGLAKE PLANT OF THE WASHINGTON WATER POWER COMPANY

At night the power plant, efficiently mounted with guards, stands in total darkness, while the cliff and all avenues of approach are so lighted as to make the unnoticed advent of a nocturnal visitor an impossibility.

Electrical Department

Flood Lighting for Protection*

The protection of industrial plants where materials are manufactured and of our great dams where power is stored to run the plants is quite as essential as any plan for the destruction of the submarine. One of the most interesting features of this war has been the adaptation of flood lighting to protective uses. From the Panama-Pacific Exposition where the possibilities of flood lighting were first fully recognized to the present war time situation, the West has taken a leading part.

Fig. 1. Typical long distance flood lighting projector.

ANOTHER striking instance of the practical application of a purely æsthetic and scenic effect of illumination is forcing itself upon the industrial activities of the nation in a manner that once again demonstrates the wonders of electricity and its indispensable characteristics as an aid in solving the present national crisis. From the great Inland Empire in and about Spokane, Washington, where electricity drives the mining output of the Northwest down to the mammoth ship building yards along the waters that flow into the great Pacific, the flood light projector is rendering an invaluable service.

In war time it is vital that our industrial plants, railways, yards, bridges, power stations, and all means of supply and distribution be safeguarded. Adequate protection in the daytime is a comparatively easy problem, but at night, when the dark hours afford cover for the prowler with intent to destroy, effective artificial lighting, to enable the guards to cover their territory efficiently is imperative.

In designing protection lighting, a few of the fundamental principles of illumination should be followed. Objects are seen by the light reflected from them to the eye and not by the light that comes from the light source directly to the eye. In designing protection lighting, therefore, two things should be kept in mind. As far as possible the light sources should be so placed as to throw the light upon the object to be seen and to enable the guards to stand in the unlighted area so that they are unseen by the approaching prowler. The guards should be protected as far as possible against glare from bright light sources. At the same time, the brighter the source in the field of vision of the approaching prowler, the more difficult it will be for

THE HALSEY POWER HOUSE

Night view of an out-of-town hydraulic power station illuminated with ten flood lighting projectors.

* Courtesy Journal of Electricity.

COLONNADE, THE PALACE OF FINE ARTS

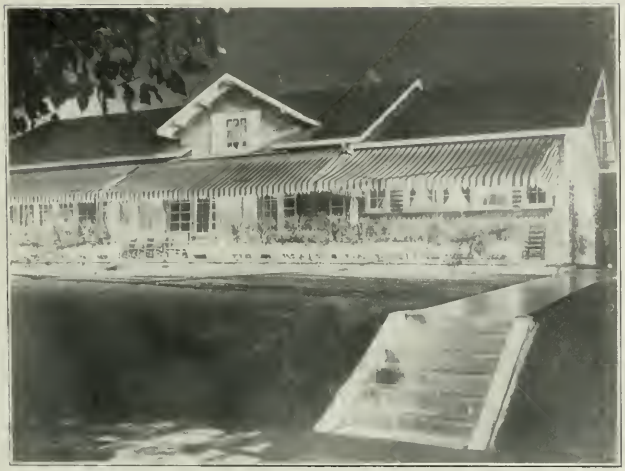
Note the detail with which this night scene is shown. Such feats in illumination as this made the Panama-Pacific Exposition world famous. In recent months these same ideas have developed a new nation-wide activity in the protection of industrial plants from prowlers by means of flood light projectors.

NIGHT VIEW, THE MARIN COUNTY SUBSTATION

him to carry out his plan.

Flood lighting projectors which consist of parabolic reflectors or a modification of parabolic reflectors properly mounted with concentrated filament Mazda C lamps will probably enable the best solution of the majority of protection lighting problems. Fig. 1 is typical of the flood lighting projectors now available. These can be obtained in a number of different types, some giving a high powered beam for long distance work, while others spread the light out over a large area. These units have the added advantage that they throw a cone of light comparatively high in power in one direction so that a guard standing back of them will be in shadow, unseen by any one approaching who will be blinded by the light.

A satisfactory method of lighting for large industrial plant which has a high fence around the building and grounds is to place high powered lighting projectors, equipped with 400-watt flood lighting Mazda C lamps, stationed about 300 feet apart and ten feet high along the top of the fence. This makes a ring of light around the plant. No one can pass through it without being seen. By placing these projectors so that all of the beams of light are pointed in one direction, there will be no annoying glare in the eyes of the patrols when they walk in the same direction the beams are pointed. Where the buildings are on the street line and no protecting fence is provided, the projectors may be placed on arms built out from the roof of the building, with



FLOOD LIGHTING A BUNGALOW

the beams of light directed so as to strike the ground about 200 feet away.

Another effective way of applying these projectors is to mount the wide angle type on top of the buildings so that they throw their cone of light away from the buildings, thus illuminating a large area about the plant. By mounting the projectors in banks and fanning out the beams, an extremely effective and very economical installation can be made.

A modification of this system is one in which a number of flood lighting projectors are mounted on a watch tower overlooking the ground. By means of these, the guard located in the tower commands a view of the lighted zone entirely surrounding the plant. Augmenting this with a high tower searchlight for long distance work, an extremely large area can be covered very economically and with few guards.

Another method employed by one of the large Pacific Coast power companies is to mount projectors at some distance from their stations and power plants for the purpose of lighting up the buildings, as well as the surrounding area. A number of good illustrations of this method are given. The power house or substation is the heart of the city's lighting and power system and anything happening to them would seriously cripple not only the lighting of the city but also the power for the industrial plants. On the Pacific Coast this is particularly important since a large number of the industrial plants are directly dependent upon the central station for their power. Flood lighting the power house is protection at the source of power.

A CITY SUBSTATION

A FACTORY AT STOCKTON, CALIFORNIA
Here is an instance of how factories are flood lighted by night in order to safeguard the industry for national service.

Architects Want Standardized Electrical Specifications

The San Francisco Electrical Development League has taken initial steps looking to a closer co-operation between the architects of the Coast and the electrical workers and power companies.

At a luncheon held recently in the Palace hotel, Messrs. Louis C. Mullgardt and Bernard R. Maybeck spoke on behalf of the architects, and explained that complete co-operation was hindered rather than helped by the volumes of conflicting or confusing literature now issued by the different electrical supply concerns. The architects explained that if the electrical people could unite and standardize their requirements—from an architectural standpoint—and express themselves in less technical language, they would facilitate co-operative work on the part of the architects who did not profess to be expert electricians.

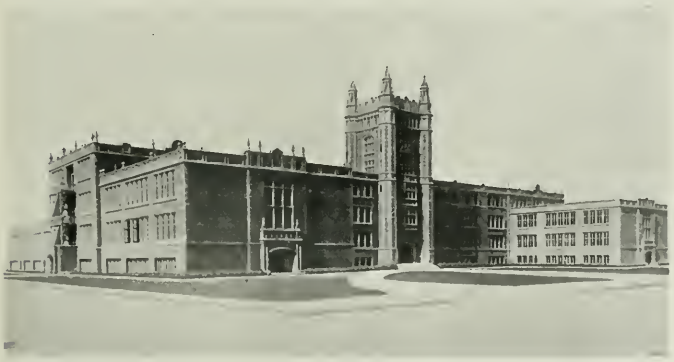
The system of separate inspections by municipal and other inspectors of electric light and electric power, and steam heat, gaslight and plumbing also tended to baffle the architects. If the electricity and power concerns could secure some legislation to consolidate these inspections, the speakers said it would be a great advantage.

Largest Reinforced Concrete Building

What is claimed to be the largest reinforced concrete building in the world has just been completed at St. Louis for the Anheuser-Busch Company. The building covers an area of 173,000 square feet or four acres, and its cubical contents are 21,932,000 cubic feet. There is one 26-foot story below ground and six stories above ground and the total floor area is 1,117,700 square feet, or 25.65 acres.

The quantities of materials used in the building include 121,560 barrels of cement in 81,040 cubic yards of concrete, 6780 tons of reinforcing steel, 92,170 half-inch U bolts for splicing reinforcing bars, 2,000,000 enameled face brick, 7,000,000 other brick and 5,951,100 feet board measure lumber for falsework and forms.

Heating and Ventilating



LOS ANGELES HIGH SCHOOL BUILDING
John C. Austin, Architect

Handling the Daylight and Ventilation Problems on South, East and West Exposures

By J. W. DUNN*

INTERIOR artificial lighting has reached a stage that is little short of perfect. There are scores of different designs and ways of treating the interior artificial lighting of all classes of buildings. With the modern indirect and semi-indirect systems and a multitude of lighting fixture manufacturers, each striving to excel the other, there is always a satisfactory solution of interior artificial lighting problems at the very finger tips of the architect. Ten years ago the indirect system of artificial lighting was in its experimental stages. Today the specifications for the most ordinary buildings embody indirect or semi-indirect lighting fixtures. The soft and restful, yet abundant, light supplied by these fixtures has completely captivated the world.

So much for artificial lighting. Now compare the treatment of sunlight as practiced today with that in vogue twenty years ago. We use sunlight from eight to fourteen hours a day and artiacial light for an average of about two hours a day. This comparison refers to public buildings, such as schools, office buildings, banks, etc. It is very apparent that the proper regulation of sunlight has not received a great deal of thought, although school children, as well as the occupants of office buildings, factories, etc., are daily suffering untold injuries to eyesight and health as result of poor daylight.

It is true that more window space is being provided in the building of today than that of twenty years ago. Sometimes this proves to be an advantage, but unless properly regulated the increased sunlight causes wholesale slaughter to eyesight, especially in those climates where the sun shines so brightly as in California and other Western States.

Ventilation, too, seems to have been almost forgotten as compared to a great many other less important details that have assumed more prominent places in modern architecture. Artificial ventilation has made considerable progress, but its use is still quite limited, being practicable in comparatively few buildings. The natural circulation of fresh air through the open window offers the best possibilities for ventilation in most cases, but even this must

* Manager Western Blind & Screen Company, Los Angeles.

INTERIOR PEOPLE'S SAVINGS BANK, SACRAMENTO
Meyers & Ward, Architects

be properly regulated before it is satisfactory.

The writer has made an exhaustive study of the various requirements for daylight and ventilation in the different classes of buildings. A few of the apparent needs are set down below:

Schools: Daylight in school rooms cannot be too good. The need for better daylight in schools is shown by the recent investigation conducted by the National Committee for the Prevention of Blindness, which divulged the fact that one out of every four school children in our public schools had defective eyesight. Good daylight and good ventilation make for good eyesight, good health and increased mental efficiency among school children. An abundance of window space is required, so that on

CITIZENS' SAVINGS BANK BUILDING, PASADENA
Perkinson & Bergstrom, Architects
(Note Venetian blinds in banking-room windows)

dark, cloudy days the eyesight will not suffer from lack of light, yet provisions should be made for eliminating the glare of bright sunlight and for reducing the light to the proper intensity, as well as to distribute it evenly throughout the rooms. While the majority of schools are equipped with the common cloth shades, some of which have patent adjusters, there is a general dissatisfaction among them as regards light and ventilation. It is claimed that such shades do not afford a satisfactory combination of light and ventilation.

Office Buildings, Public Buildings, Etc.: Here the owners and managers are striving to give their tenants comfortable, well-lighted and well-ventilated offices, but the shade and awning problem is a sore spot with them. Many

of the modern buildings refuse to allow awnings placed on their windows, because of their unsightly appearance, yet the tenants occupying south, east and west exposures fairly roast during the heat of the summer. Those who do use awnings complain about the enormous expense of upkeep and the incessant bother they cause. It would seem that there's room for improvement in the control of heat, light and ventilation on the sunny exposures of such buildings.

Banks: The daylight problem in banks differs from most cases. Banking rooms are usually large, having windows on two sides. An abundance of window space is being provided in the modern structures, but in most cases the cage-work and banking fixtures interfere with the light. Modern banks dislike the awning because of its appearance and also on account of the fact that it excludes too much daylight while in use, yet it is quite necessary to exclude the sunshine and glare. The same objection applies to the common window shade.

A Combination Shade and Awning: Architects who have given the subject careful study have discovered a solution to the daylight problem in the Venetian blind. It is claimed by the manufacturers that the device permits of excellent regulation of light, sun, heat and ventilation—a combination that insures health and contentment.

Honor for Mr. Coleman

Mr. Alexander Coleman, who has been an active worker in the Master Plumbers Association of San Francisco as well as the state organization, was recently honored by being chosen president of the San Francisco association. Other officers elected were:

Mr. James Pinkerton, vice-president; Mr. Albert J. Wilson, treasurer; Mr. Robert W. Mackie, recording secretary; Mr. J. L. E. Firmin, corresponding secretary. The board of directors is composed of Messrs. Alexander Coleman, James Pinkerton, William Buick, Albert J. Wilson, Frank J. Klimm, William J. Turner, C. John Doughty, Joseph Rohr, Richard J. O'Brien, Sibbert Peterson, Frederick W. Snook, Robert W. Mackie, A. J. Silva, William Goss and William La Chappelle.

Ray Oil Burner Has New Los Angeles Office

Mr. A. Tappeiner, 143 Wilmington street, Los Angeles, has taken the Southern California agency for the Ray Rotary Crude Oil burner, manufactured in San Francisco, and which is adapted for furnaces, low pressure or high pressure steam boilers. With the Ray system, which includes a patented switch that will automatically kick off when the "juice" fails, no oil can accumulate under the fire box with the attendant damage of fire and danger to the apparatus. When properly installed all soot, smoke, carbon, noise, etc., will be eliminated. The Ray burner when used under high pressure steam boilers will show a saving in oil over the steam atomized burners. The fire may be started at any time whether a sufficient steam pressure exists or not. The use of wood which is necessary for the starting of steam boilers is also eliminated. With the Ray burner it means less water evaporated and hence less repairs to the steam boiler. All parts of the Ray burner are placed outside of the boiler away from the intense heat of the firebox, a decided advantage. When closing down the fire the burner may be unlatched, and swung out of firing position.

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Pioneer San Francisco Firm Occupies Larger Quarters

MANGRUM & OTTER, INC., one of San Francisco's pioneer business houses—a firm that for many years has been more or less identified with the building industry of the city, has been compelled to seek larger and more convenient quarters.

On February 1st this firm moved to 827-831 Mission street, between Fourth and Fifth streets, in the building expressly erected a few years ago for Albert Pick & Co., of Chicago, and more recently used as the headquarters of the California Chapter of the American National Red Cross. This change from the old premises at 561-563 Mission street affords 35 per cent more floor area, including spacious display rooms in the first and second floors, more expansive accommodations for their manufacturing departments and up-to-date facilities for storing and handling an extensive stock, in-

cluding everything in the line of heating equipment and cooking appliances. This stock was recently augmented by the purchase of the entire tile and mantel department of the firm of W. W. Montague & Co., retired.

As early as 1887, Mr. Arthur S. Mangrum and Mr. Hugo W. Otter formed a co-partnership in San Jose, and starting in a modest way, laid the foundation for the extensive business of today. Seeking a larger field of activity, they moved to San Francisco in October, 1895, and located at 27 New Montgomery street. Later the firm expanded, moving to Market and Second streets, remaining there until the fire of April 18, 1906, which destroyed the business section of the city.

Soon after coming to San Francisco, the business was incorporated and Mr. Otter withdrew from active participation in the business. The entire management reverted to Mr. Mangrum, who purchased the stock in transit of the firm of Weister & Co., and immediately began the erection of the first temporary building in the burned district. Possession of this building was taken early in May, almost before the ruins had ceased to smoulder.

The following Christmas night the firm was again burned out, but fortunately the bulk of their stock was stored in a warehouse on the railroad, so that the business was not seriously interfered with. Undaunted by this second disaster, Mr. Mangrum rebuilt and occupied the temporary building until the firm got possession of their permanent home on February 1, 1908.

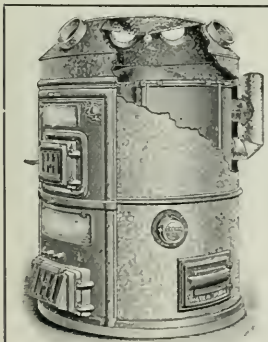
In the business of designing, building and installing heating appliances and hotel kitchen equipment and furnishing and setting tile of every description, the company was able to actively participate in the rehabilitation of San Francisco, as evidenced by the many contracts executed in the last decade. These include transactions with the Palace, St. Francis, Clift and Whitcomb hotels, the Y. M. C. A., Hobart and American National Bank buildings, the Southern Pacific, St. Luke's, St. Mary's, Stanford University and San Francisco City and County hospitals, and innumerable apartment houses, restaurants, cafeterias and private residences.

In addition to their manufacturing business, the company, as wholesalers and jobbers, employ a corps of traveling salesmen, calling on the dealers in Northern and Central California, and soliciting orders for stoves, ranges, refrigerators and everything in the line of utensils, brooms, brushes, electrical and mechanical appliances now so necessary for household use. They are the exclusive agents for the distribution of many nationally advertised goods, among them the celebrated "Garland" gas, coal and wood ranges, heating stoves and water heaters, the "Leonard Cleanable" refrigerators and the "Crescent" electric dish washer.

The Mangrum & Otter, Inc., celebrated French ranges with oil-burning attachment are in successful operation in many of the large institutions within the bay district.

$20,000 Auto Sales Building

Mr. Samuel L. Hyman, architect in the Crocker building, San Francisco, has prepared plans for a $20,000 brick garage and automobile sales building to be erected at Pine and Franklin streets, San Francisco.



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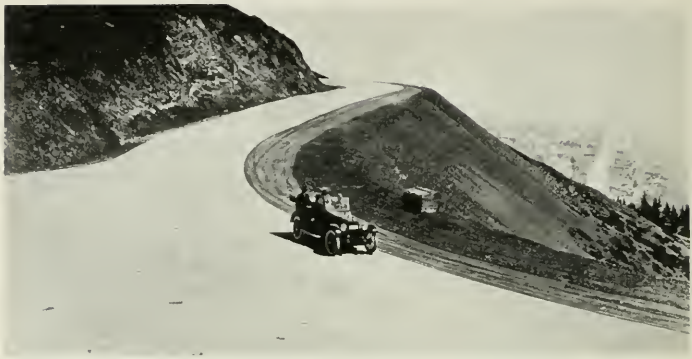

Twin Peaks Boulevard, a Notable Concrete Roadway

The Twin Peaks boulevard to the west of San Francisco was built by the city of San Francisco at a cost of $55,-154. Construction began November, 1915, and was completed in August, 1916. Mr. M. M. O'Shaughnessy, city engineer, not only built this beautiful boulevard, but designed the Twin Peaks tunnel, which runs directly beneath this highway for a length of two miles, opening thousands of acres of new subdivisions in the western part of the city.

Mr. D. L. Bienfield of San Francisco constructed this road and used "Armco" iron culverts, which are said to be giving satisfactory service. Thousands of automobiles are continually going over this boulevard, which affords the pleasure seekers a splendid view of San Francisco, the Pacific ocean and the East Bay cities.

Solves Transportation Problem

Tulare county, California, has solved the transportation problem in connection with the building of county highways. More than 200 flat cars that had been put out of service have been reconstructed and boarded up on the sides and are now carrying crushed rock, sand and other materials needed for the completion of the twenty miles of county highways under contract. The cars are marked "Tulare County, by Permission United States War Department," government acquiescence in the use of the discarded rolling stock having been secured soon after the embargo was placed on cars for transporting road materials.

State Agricultural Building

Plans have been completed by State Architect George B. McDougall and Messrs. E. A. Matthews and Sylvain Schnaittacher, associates, of San Francisco, for a new agricultural pavilion to replace the building burned two years ago in the California State fair grounds, Sacramento.

The building will be 485 feet in length. The width of the wings will be 108 feet, while the main body of the structure projecting for the entrance and offices will be 185 feet wide.

The vertical dimensions will be fifty feet in height to the eaves of the main roof; from the ground to the lantern which caps the dome the height will be 120 feet. The dome will be fifty-six feet in circumference. It will be the grand feature of the structure, with its mass of steel trusswork and lofty appearance.

The building will be steel frame, truss construction with central dome and bridge. It will be faced with brick and the roof will be covered with clay tile and the floors constructed of concrete.

There will be an eighteen-foot gallery above the main floor. Here will be located waiting room, lunch room with cooking facilities for directors; library, office statistician, and a lecture and moving picture hall, rest room for women, and grand hall room 48x60 feet.

There will be eight stairways of ample width leading from the main floor to the gallery. A partial basement will afford large storage facilities. Two bridges will connect the opposite galleries on either side of the dome at the ends. The span of the main roof trusses will be seventy feet. Six hundred tons of structural steel will be used. The framework will be exposed and so designed that it will be architecturally pleasing in appearance, and imposing in the truest sense.

Pacific Coast Steel Expands

The Pacific Coast Steel Company has recently completed an addition to its South San Francisco plant which will enable the company to do an extensive fabricating and galvanizing business. This department has been sorely needed and the improvement will enable the company to fill some big orders in galvanizing. The shop covers nearly a half acre and was built in record time. Ground was broken September 18 and the day after Christmas the first shipment of a large order was made.

Plans are completed for two or more additional open hearth furnaces, also an office building, and construction of an immense oil storage reservoir is practically finished. The tank is built of reinforced concrete, is 70 feet in circumference at the bottom and 116 feet in diameter at the top, the variance in size being due to the fact that it occupies a hill-side site. The reservoir has a capacity of 16,000 barrels.

Welcomes Uncle Sam

The Architect and Engineer has received a request to exchange with the Architect and Builder of Cape Town, South Africa. The following letter is interesting:

Under separate cover I am sending you a copy of the Architect and Builder, and I will be pleased to hear that you are willing to exchange issues.

If at any time there is any specific information pertaining to the architectural profession or building and engineering trades in South Africa that you require, I will gladly supply it.

Your Consul in Cape Town was kind enough to give me your address.

I trust that, despite the war, you are flourishing and fraternally I gladly welcome the advent of your nation into the conflict, believing that it will hasten a lasting and satisfactory settlement.

Yours very sincerely,
THE ARCHITECT AND BUILDER.
Jas. T. Brown, Editor.

Sacramento Hotel Building.

Plans are being prepared by Mr. F. A. S. Foale, Oschner building, Sacramento, for a three-story reinforced concrete store and hotel building to be erected at Seventh and "J" streets, that city, for Mr. C. S. Krebs.

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Trade Notes

J. T. Costello Co., insurance brokers, have moved from 216 Pine street to 333 Pine street, San Francisco. The phone number has been changed to Garfield 1587.

Mr. K. E. Parker, for a number of years with the Clinton Construction Company, has entered the building field for himself, specializing in reinforced concrete. Mr. Parker has opened offices at 251 Kearny street, San Francisco.

The contracting firm of Stockholm & Allyn, Monadnock building, San Francisco, has dissolved partnership on account of the failing health of Mr. Allyn, who is to undergo special treatment of his eyes. Mr. Stockholm will continue in the contracting business and for the time being will retain the office in the Monadnock building.

City Planning

Abundant illustration from European city planning characterizes the second annual report of the California State Capital Planning Commission. The work at Sacramento began with a committee of five in the Chamber of Commerce. Under the late Mr. Charles Mulford Robinson and afterward Mr. Werner Hagemann, the committee was increased to 150. This was followed by the engagement of Dr. John Nolan, whose city plan was written into the municipal code. The city, meantime, had acquired nearly 900 acres of municipal park. Then came the creation by the Legislature of a State Commission to develop Sacramento under the Nolan plan as a model capital. The second annual report of this commission is now ready for distribution. Free copies may be had by addressing State Librarian M. J. Ferguson, Sacramento, California.

Alameda Residence

Mr Fred N. Strang, 805 Pacific avenue, Alameda, has been awarded a contract to build a two-story and basement frame and rustic residence at Alameda for Mr. W. L. Weinman, the San Francisco paper man. Contract is for approximately $5500.

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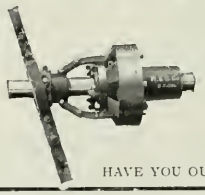
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Richmond Architect Writes of Eastern Blizzards

Captain James T. Narbett, U. S. Army Engineers, until recently a practicing architect at Richmond, California, writes an interesting letter from Chicago telling of his experiences on his journey eastward. He says:

We enjoyed very pleasant weather until after leaving Reno, apparently no sign of snow crossing the Sierras. After leaving Cheyenne, due to the cold, our engine blew a cylinder head, borrowed a freight engine, arriving 6½ hours late at Omaha. Very cold crossing Nebraska and Iowa. One period during the early morning hours of Thursday we endured something like 30 degrees below, and because of insufficient steam through the pipes, we wore our overcoats and went to bed early with our clothes on to keep warm.

We arrived in Chicago in a terrific blizzard, thirteen hours late without lights—our generator out of commission. With the assistance of lanterns passengers got their luggage together.

Left on Pennsylvania, Columbus train at 11:30 Friday night. Spent balance of night and all day Saturday stalled in a snow drift five miles out from Chicago.

Four army aviation students on their way to Columbus, and myself, volunteered to assist the train crew in going out after food. We were a full half hour going less than a quarter of a mile, but we succeeded and sufficient hot coffee and sandwiches were furnished by the railroad company all day long. Fifteen below and blowing is no pleasant sensation. I believe it would be impossible for a human being to endure this cold to walk through snow drifts one mile.

At 5 o'clock yesterday we were crowded on the front day coach and with the assistance of three powerful engines our one car was pulled back to Chicago. With all the discomforts I did not hear of one grouch.

No assurance is given as to when we shall be able to proceed to Virginia, as all trains are annulled.

Meeting of Landscape Architects

The American Society of Landscape Architects, of which Mr. Wilbur David Cook of Los Angeles is a member, held its annual meeting in New York city recently, at which the activities of the landscape architect in relation to the war and more especially the laying out of the great military cantonments, were discussed. Members of the society supervised the work in fourteen of these cantonments. It was stated that the adoption of two-story buildings instead of one-story buildings as originally intended, resulted in a saving in construction work of various kinds of about $800,000 on each cantonment.

Sperry Flour Plant

Mr. Maurice Couchot, C. E., French Bank building, San Francisco, has completed plans for a concrete milling and storage plant at Tacoma, Washington, for the Sperry Flour Company. It is estimated the building will cost close to $250,000. This is the third building of the kind designed by Mr. Couchot for the Sperry Flour Company, the others being in Vallejo and Spokane.

Too Many Pasteboard and Mucilage Houses

Writing of the industrial activity in the San Francisco Bay cities and the demand for increased housing facilities, a correspondent of the National Real Estate Journal sounds a note of warning that should not go unheeded. He says:

In practically every community where a sudden increase in industrial activities has brought new workers into the city, a decided stimulus is given to the building of cottage homes to sell at from $2,500 to $3,000 or to rent at from $15.00 to $30.00 a month, and in all too many cases, these houses are of the character commonly termed "paste-board and mucilage houses."

Such a house skillfully designed and cleverly built will present a very attractive appearance, and will usually sell very readily and yield a handsome profit to the builder, and will incidentally sell the lot on which it is built. But the first winter's storms will usually show the building in its true character and the purchaser cries "Wolf" and "Thief." Frequently the land owner is not to blame for the character of the construction of the houses, but he suffers because of it in equal proportion to the builder and generally to a greater extent.

To prevent the construction of "pasteboard and mucilage houses," with the dissatisfaction and trouble that is bound to result, the Oakland Real Estate Board has taken up jointly with the General Contractors Association, and the Building Trades Council the study of this subject in the hope of effecting a building program as the result of which prospective buyers of homes are assured of substantial construction, fair values and equitable terms. The work of the joint committee has gone far enough now to convince the members that such a plan can be evolved and will be satisfactory to all concerned.

What Is a Dwelling House in Building Restrictions?

A flat building may be erected on a lot conveyed with a restriction prohibiting the erection on the same of a building for any other purpose than a "dwelling house," unless the restriction specifically prohibits a flat building, according to the decision handed down by Judge L. H. Valentine in the superior court at Los Angeles in a case styled Pierson vs. Kline, and involving an interpretation of the restrictions on property in the Pioneer Investment Company's Windermere Park tract in the city of Los Angeles.

The defendant, Mr. J. Grant Kline, is the owner of a lot on the corner of North Kenmore avenue and Clinton street; Mr. George W. Pierson is the owner of the property adjoining Mr. Kline's lot. Mr. Kline commenced the erection on his property of a flat building, a residence for more than one family under the same roof. Mr. Pierson applied for an injunction to prevent the erection by Mr. Kline of the structure, contending that under the building restrictions on all of the property in the Windermere Park tract no structure other than a private residence to be occupied by one family, only, could be built.

The language of the restrictions, as set out in Mr. Pierson's complaint for an injunction, is as follows: (See Page 129).

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In his answer filed by his attorneys, Messrs. George W. MacLellan and Harold E. Thomas, Mr. Kline admitted that he was building a four-family residence costing about $13,000, but asserted that under the terms of the restrictions he had the right to build such a structure and that the building he was constructing was "a dwelling house and used exclusively as a dwelling house."

At the trial of the case, Mr. Pierson's attorney maintained that although flat buildings had been erected on other streets in the tract, these did not in any way injure his property and that he had a right to enjoin the erection of Mr. Kline's flat building on North Kenmore avenue, a high-class residence street one hundred feet wide, and on which no buildings other than first-class private residences for one family only had been erected, and that Mr. Kline's building was in plain violation of the terms of the restrictions on the property.

Mr. Kline's attorneys maintained that if the meaning of the language of a restriction is doubtful, all doubt should be resolved in favor of the free use of property by its owner and that since the language of the restrictions did not specifically forbid the erection of flats and as a flat was "a dwelling house and used exclusively as a dwelling house," the court should deny the injunction.

It appeared that there had been no interpretation by the highest courts of the State of California of the term "dwelling house" and that in other states, same courts had interpreted the term "dwelling house" as including flats and other courts as excluding them.

After careful and thorough consideration of the case, Judge Valentine decided that in view of the right of a man to use his property as he sees fit unless expressly prohibited by the terms of a valid building restriction, and as flats were not expressly forbidden in this instance by the terms of the restrictions, he would refuse to grant the injunction asked by Mr. Pierson and gave his judgment in favor of the defendant, Mr. Kline.

$75,000 Burlingame House

Plans have been completed by Messrs. Howard & White, Lick building, San Francisco, for a $75,000 country home and garage at Burlingame, for Mr. Walter S. Martin.

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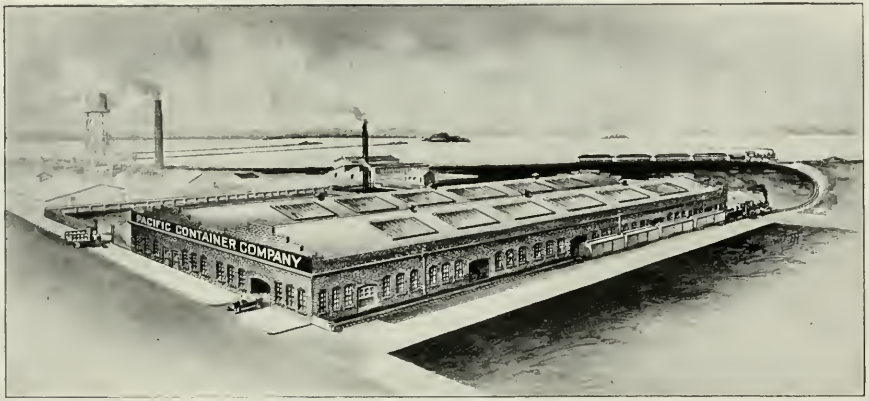

New Plant of Pacific Container Company Waterproofed with "Imperial"

The above picture shows the new plant in West Berkeley of the Pacific Container Company recently completed by F. A. Muller, an Oakland contractor. The building is 175 x 200 feet and a good example of modern factory construction. The walls are waterproofed with "Imperial," manufactured by Messrs. Brooks & Doer, and applied under the personal supervision of Mr. Reed Baxter, 1002 Merchants National Bank building, San Francisco.

BOOK REVIEW

How to Study Architecture

HOW TO STUDY ARCHITECTURE. by Charles H. Caffin. Published by Dodd, Mead & Co., Fourth avenue and Thirtieth street, New York. Illustrated. Price $3.50 net.

This is something really new by way of offering the reader practical advice calculated to assist him in understanding and appreciating the best in architecture. The book may be read with profit, not only by the student, but by practicing members of the profession and the layman interested in architecture.

"How to Study Architecture" traces the course of civilization in its particular relation to architecture and the development of architecture in response to man's progress in civilization. Avoiding technicalities, the author treats of first: the principles of organic construction, as they have been affected by the purpose of the structure, the racial characteristics of the builders, local conditions, and the material and methods available; and, second, the principles of organic ornament, similarly affected. He has covered the ground thoroughly from the ancient Swiss lake-dwellings to the modern skyscraper, and has added some very interesting and constructive information on the immediate necessity for the cultivation of the fine arts in modern construction today.

A unique feature of the book is the consideration in separate chapters of the architecture of each period with the civilization of which it was a product.

May Hold Architectural Competition

(From the Oakland Tribune.)

With several architects favored by different members of the Board of Education and the bond advisory committee in their consideration of the proposed building program to relieve the congestion in the public schools, it is possible, according to members of the board, that a competition, similar to that by which Mr. Charles P. Weeks was chosen architect for the County Infirmary, will decide the question.

The matter came up at the first joint meeting of the advisory committee with the board, when it was intimated that the committee would recommend architects, and the board answered that this would naturally come under the scope of the executive heads of the school department. It was declared that strong representations had been made for Mr. J. J. Donovan, architect for the last school buildings erected, for Mr. C. W. Dickey, who for a time was in partnership with Mr. Donovan, while several members of the board had urged selection of the architect who designed the St. Louis system of schools, which received world-wide notice.

In view of this, several members of the board unofficially expressed themselves as favoring a competition to decide the architect when the time came, or possibly a competition for every school, throwing the work open to all California architects or even experts in the East, with all having an equal chance.

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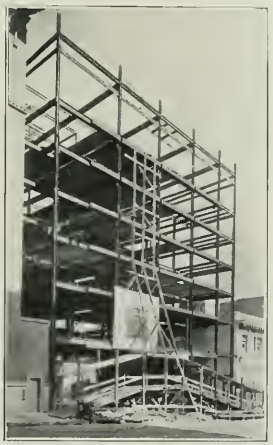

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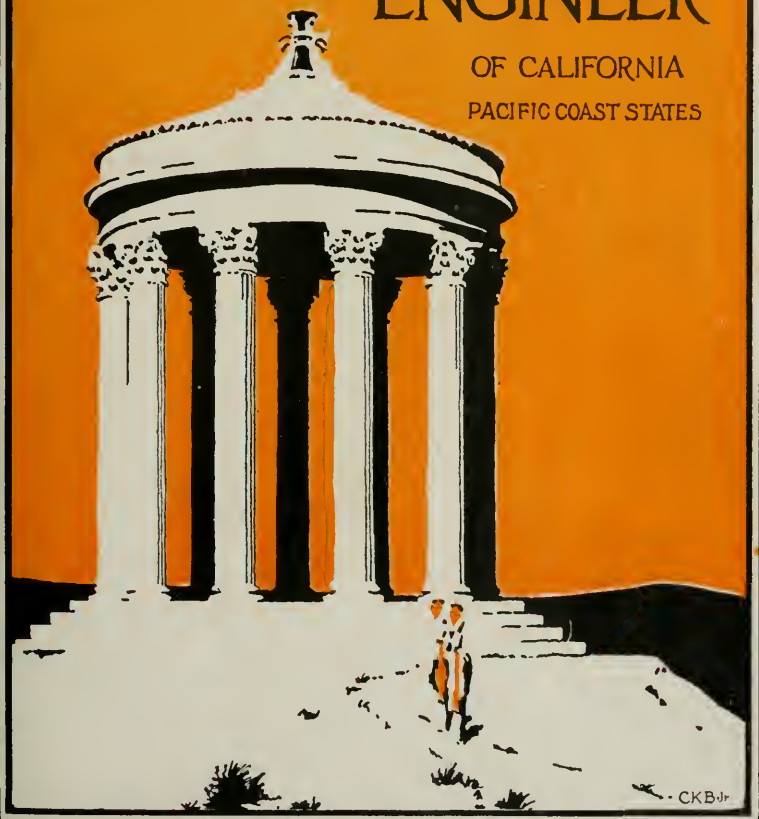

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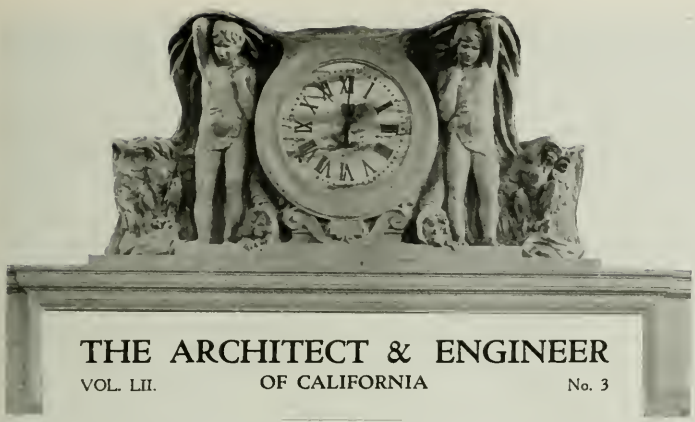

THE ARCHITECT & ENGINEER

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Willis Polk & Co., Architects

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Published Monthly at 626-627 Foxcroft Building, San Francisco, in the interest of
ARCHITECTS, STRUCTURAL ENGINEERS, CONTRACTORS AND THE ALLIED TRADES OF THE PACIFIC COAST

Yearly Subscription $1.50
Single Copy, 25 cents

Entered at San Francisco Post Office as Second Class Matter

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LATIN AMERICA, FROM THE GROUP, "NATIONS OF THE WEST," P. P. I. E.
LEO LENTELLI, SCULPTOR

Frontispiece
The Architect and Engineer
of California
for March, 1918.

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

MARCH, 1918 Vol. LII. Number 3.

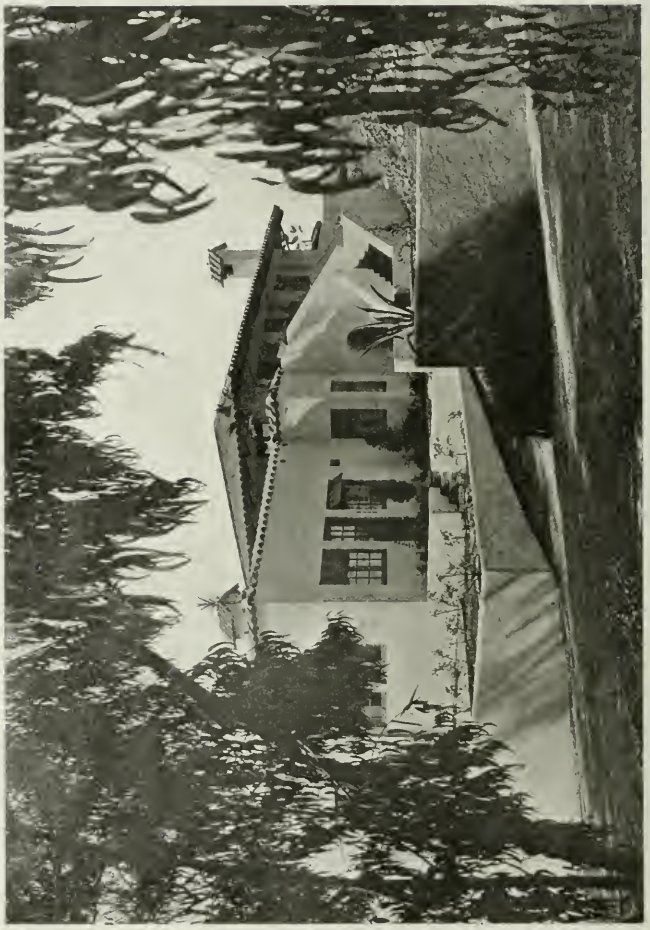
Some Picturesque Homes in Southern California

By W. GARDEN MITCHELL, Architect

Overhanging Window and Balcony

NO INFLEXIBLE rule determines a thing to be good because simple, or good because elaborate; neither the reverse —that is, bad because simple, or bad because elaborate. Twenty years ago or more public taste considered elaboration and merit on almost synonymous terms, and today the pendulum swinging the other way begets the idea that all we need is simplicity in order to find something good, and we hear the critic repeating and repeating the words, "keep it simple." Good advice, no doubt, but the fact remains that a thing may be very good or very bad, though simple, and very good or bad, though elaborate. In short, neither simplicity nor elaboration makes or mars a creation of man of necessity. Simplicity has its special charm and possibilities, appealing to the imagination in one way, while intricacy appeals in another. The broad, plain surfaces of the exterior of the Castle of Granada pleases us by playing upon one chord of our imagination, while the elaborate fret work and modeling of the interior charms us equally by vibrating some other chord. So likewise we may bring to mind the stately and restrained simplicity, produced by few elements, and slight and oft-repeated detail as we find it in many examples of Italian palaces.

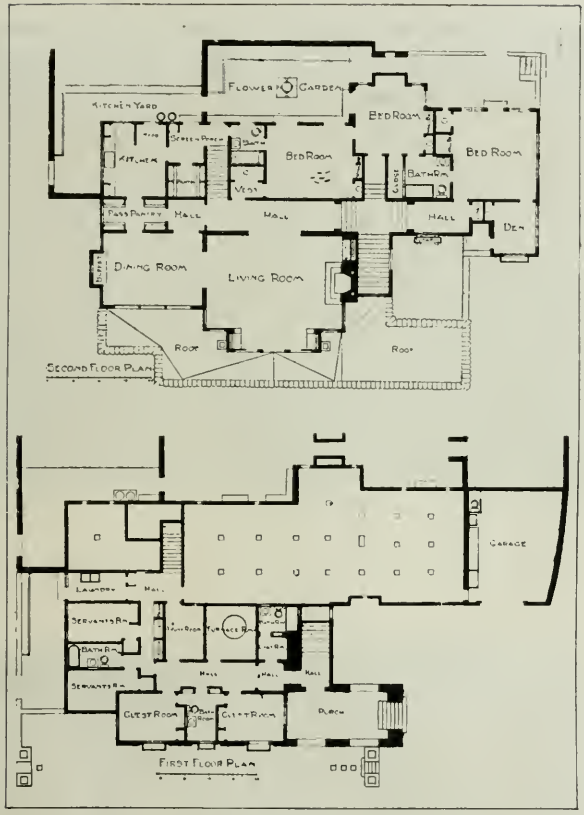
But who shall say that because we admire the admirable effect produced by the use of simple and slight embellishments we are any the less impressed by the gorgeousness, vigor and robustness of the front of Rheims Cathedral or that wonderful intricate lace-work in stone as exhibited in the chapel of Henry VII at Westminster.



HOUSE OF MRS. V. KNUDSEN, HOLLYWOOD
MEAD & REQUA, ARCHITECTS

NORTH COURT YARD, RESIDENCE OF MRS. V. KNUDSEN, HOLLYWOOD
MEAD & REQUA, ARCHITECTS

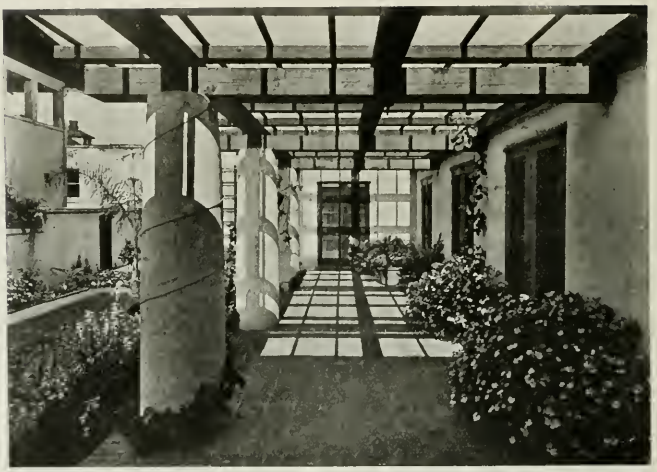
WALL FOUNTAIN AND ENTRANCE TO SERVICE DEPARTMENT, RESIDENCE OF MRS. V. KNUDSEN, HOLLYWOOD
MEAD & REQUA, ARCHITECTS



PLANS, RESIDENCE OF MRS. V. KNUDSEN, HOLLYWOOD
Mead & Requa, Architects

In talking of simple architecture or simple design of any kind we must not fall into the mistake of supposing that simple means something easy to produce, by no means, for as much genius may be expended on the simple as on the elaborate; in other words, a man may put his whole soul into a simple creation as readily or with as much travail as into something elaborate. It may, however, require a higher degree of genius to carry to perfection the elaborate. And, speaking generally, those monuments of architecture that appeal most to the imagination embody size, elaboration and color.

For, whether in architecture or other composition, wherein man endeavors to express his higher hopes and aspirations, certain basic prin-



PERGOLA AND COURT YARD, RESIDENCE OF MRS. V. KNUDSEN, HOLLYWOOD
Mead & Requa, Architects

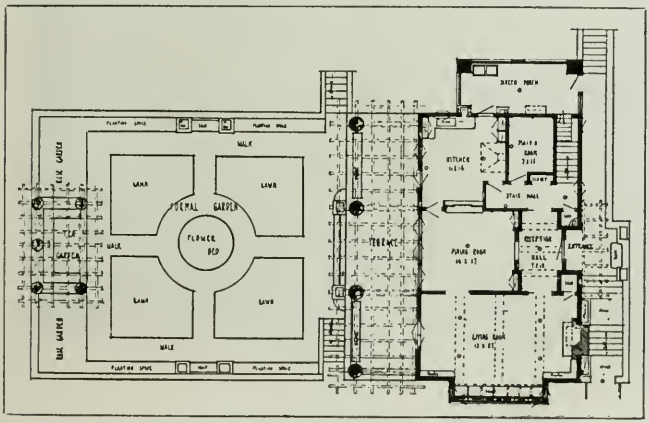
BILLIARD ROOM, RESIDENCE OF MR. R. BRACKENBURY, SAN DIEGO
Mead & Requa, Architects

RESIDENCES OF MR. R. BRACKENBURY AND DR. I. D. WEBSTER, SAN DIEGO
Mead & Requa, Architects

ciples, certain co-relation of parts that we call proportion, must of necessity form the frame work, and whether we stop at the elemental or carry our creation into the realm of intricate fantasy, this foundation or frame work must be first set out in well-balanced and proportioned parts.

The fundamentals and basic elements must be well disposed, so that as a mass, even if left in the rough and carried no further, viewed at a distance or near at hand or at any intermediate point, no matter where, merit will be disclosed. If our fundamentals are correct, we may stop even there and have something good, but without success in these no added elaboration, be it either form or color, can atone for the underlying fault; it may help to conceal or it may exaggerate the fault, but never correct it.

It may, however, be more difficult to elaborate on these fundamentals than to leave them in their elemental form. A painter frequently may be found, not a master, who can carry forward with considerable skill an



PLAN, RESIDENCE OF DR. I. D. WEBSTER, SAN DIEGO
Mead & Requa, Architects

ENTRANCE, RESIDENCE OF MR. R. C. GEMMELL, SAN DIEGO
MEAD & REQUA, ARCHITECTS

MAIN ENTRANCE, LOOKING INTO PATIO, RESIDENCE OF MR. ROBERT WINSOR, SWEET WATER VALLEY
MEAD & REQUA, ARCHITECTS

idea to a point well beyond the diagram, but here his knowledge ends, and should he try to proceed further the merit first disclosed in something of an impression or sketch becomes lost in the inferior trappings with which he endeavors to embellish his subject. Not so with the master, who, equally conversant with detail as with ideas, proceeds from point to point with confident assurance, giving to his painting strokes that eliminate or add with as much ease in the final touches of elaboration and minuteness as displayed in blocking in the outline of his conception.

So that, while the whole soul of genius may be expressed in either simple or elaborate design, it probably does require more ability to provide mass, motive, ornament and color all in excellent taste and proportion. There is, however, a fitness of things to be considered apart from the abstract question of the merits of simplicity contrasted with complexity, and even were it possible to determine that greater genius can be expressed better through the compound than through simple media, use and suitability may dictate without appeal that simplicity and not complexity is the medium through which the problem can be successfully solved. A thing inappropriate, even if beautiful in itself, must of necessity fail to please us, for if it violates our sense of fitness it violates a fundamental, reducing if not destroying the pleasing impression it strives to create.

We are brought thus to the conclusion that, while elaboration may be the correct medium through which to approach one problem, simplicity with equal force dictates that it shall be the channel through which we must approach some other.

And so to the subject we have more closely in hand, namely, the art of building the modest home. By modest I mean that the owner, not being wealthy, wishes to build a home in consonance with his means and appropriate to his mode and circumstance of life. Now, in actual practice such a prospective builder requires in real accommodation and conveniences as much or more than his purse can well afford, so that the architect, if judicious, chooses of necessity simplicity in form and material for both his exterior and interior, and if perchance he has any loose money to spend he will concentrate his efforts in one or more elaborate spots or jewels set in the simple casket; and when it comes to choosing between greater elaboration and inferior material he will choose the simpler forms and the better material.

And so from time immemorial, acting under the pressure of necessity and tutored by experience, men of moderate means, guided by good taste, have chosen simplicity as the medium through which to express their judgment—that quality without elaboration, rather than elaboration with poor quality, indicates a more substantial and estimable disposition.

Thus it is becoming that in planning the modest home, the house of moderate cost, moderate in relation to size, the architect and owner, if in agreement, choose wisely the simple style.

On such substantial judgment the foundation will rest secure, the roof tree defy the blast and the hearthstone glow with good cheer. Wide-eyed to every point of vantage, the openings will give egress to a wonder world beyond and ingress to the genial sunshine, while mingling house and garden as much as possible. Nature from its inexhaustible store of bright skies and cool shadows, brilliant flowers and gleaming foliage, embellishments that cost so little and yet bring so much in form and color, will enrich in ever-changing wonder of detail the simple walls that enclose

and form a background to shapes and lineaments created by the most dexterous and versatile of all artificers.

The accompanying illustrations, showing some of the recent work of Messrs. Mead & Requa of San Diego, exhibit in many pleasing ways this attempt to produce the picturesque, that is to make the construction of artificial additions to nature harmonize with and become a part thereof, heightening and increasing the interest of the scene.

The overhanging window and balcony (Mrs. Knudsen's home in Hollywood) exhibits the principle of centering one's interest on some well chosen part, in contrast with quiet and restful unadorned background.

The wall fountain and entrance to the service department in the residence of Mrs. Knudsen illustrates the fundamental for which we have contended, that simple and substantial forms in the residence of moderate cost are to be preferred over and above elaboration in slight and flimsy material. The same idea is expressed in the main entrance, looking into the patio, residence of Mr. Robert Winsor.

The pergola protected corridor in the home of Mr. Lorenze W. Barney in San Diego exhibits in a pleasing manner the intimate relation of house and garden, wherein the two are intertwined. Taking it all in all, we may confidently say, in viewing this work, that Messrs. Mead & Requa are following along the right lines in their quite successful attempt to provide interesting and sane homes of moderate cost by the use of simple forms, with only just sufficient elaboration in some special feature or features to provide the necessary contrast to plain and restful backgrounds.

* * *

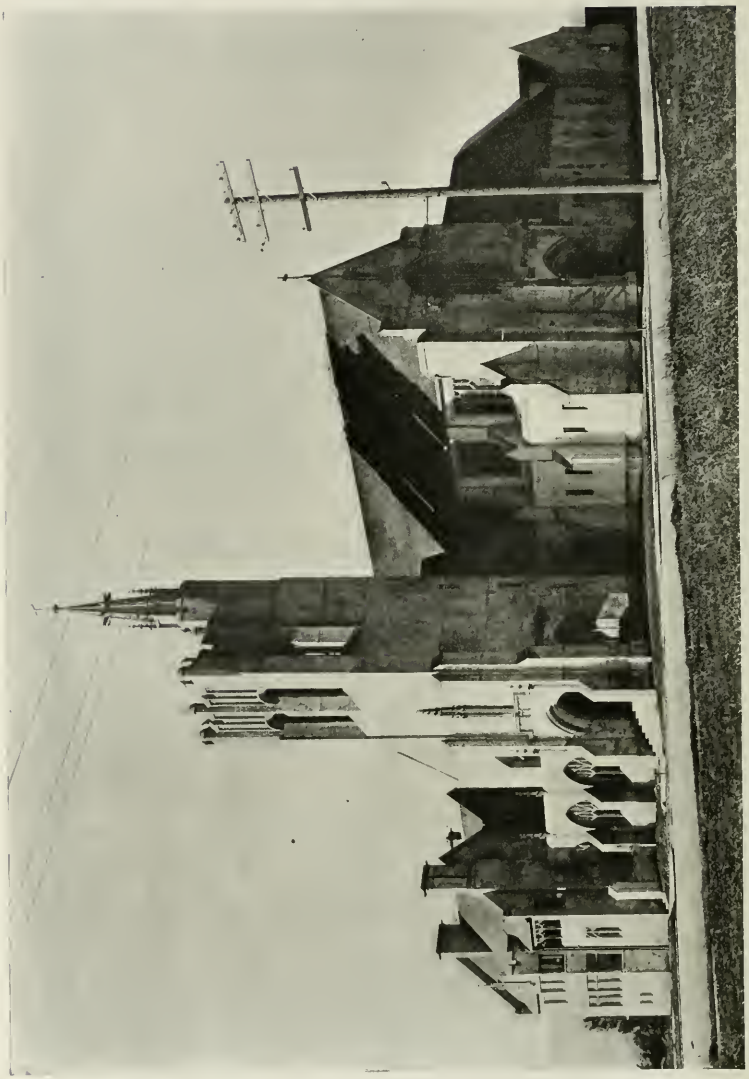
Architect Not Liable for Injuries

IF an architect exercises a reasonable degree of skill and care in his work he is not liable for injuries sustained in consequence of defects in plans prepared by him, according to a decision made recently by the Michigan Supreme Court in the case of Bayne vs. Everham et al. The court also rules that in no event can the architect be held liable for injury resulting from a collapse of a building due to defective construction.

In this suit damages were sought by plaintiff as administrator for the death of a carpenter, who was killed by the collapse of a garage in course of construction. The court found that the following principles of law applied to the case:

"In Corpus Juris, vol. 5, p. 269, the rule is stated as follows: 'In the preparation of plans and specifications, the architect must possess and exercise the care and skill of those ordinarily skilled in the business; if he does so, he is not liable for faults of construction resulting from defects in plans, as his undertaking does not imply or guarantee a perfect plan or a satisfactory result, it being considered enough that the architect himself is not the cause of any failure, and there is no implied promise that miscalculations may not occur.'

"This court has held that the responsibility of an architect does not differ from that of a lawyer or physician. When he possesses the requisite skill and knowledge, and in the exercise thereof has used his best judgment, he has done all that the law requires. The architect is not a warrantor of his plans and specifications. The result may show a mistake or defect, although he may have exercised the reasonable skill required."



ALL SOULS' CHURCH, SOUTH SAN FRANCISCO
GEORGE E. McCREA, ARCHITECT

Character in Church Design

By GEORGE E. McCREA, Architect*

THE average American church builder has felt up to the present time that a structure, properly lighted, warmed, ventilated, large enough to house the congregation, and with good acoustic properties was amply suited to the needs of the congregation. However, others have felt that in addition to these bare necessities a church should express in some fitting manner its purpose and character and try to bring home to the congregation a message. In the average church about half the money expended is spent to accomplish this latter purpose. In many cases this additional expenditure has been worse than wasted. Many churches, through the lack of conception of the character to be expressed or through a wrong conception on the part of the designer, have at great cost developed into what, were it not for the cross which surmounts them, might be taken for museums, town halls, theatres, pagan temples or exaggerated bungalows; or, through a more or less correct use of historic ornament are fairly good but absolutely lifeless reproductions of what in other times or in other environments were suitable church buildings.

It is reasonable to suppose that these churches in most cases represent the ideas and ideals of those who controlled their design and erection—that they show the relative importance attached by their builders to the physical and the spiritual in life; that they show whether the wishes of the housekeeper, the sexton, and the window washer dictated their design, or whether their architecture was intended to uplift and exalt the hearts of those who worshipped in them.

The impressive solemnity which characterizes so many of the mediaeval churches in Europe is but the expression of a people who considered their religion the greatest thing in their lives. They usually began by selecting as dominating a site as possible; made the church the central figure and grouped about it the various units necessary for the performance of all parochial functions, each suggesting unmistakably its proper purpose and relations to its neighbors. Surrounding this group was the town with its shops, factories and homes — the church with its massive walls and ample buttresses always dominating, and holding high over all, the cross, the symbol of salvation. The church might have been said to be the heart of the living town radiating its benign influence everywhere. It also served to give the poor, the simple, and the lowly a faint foreshadowing of the beauty of their Father's house in the kingdom that is to come. The splendor of the church door proclaimed God's welcome to His children. The magnificence of its interior, its columns, its arches, its vaulted ceilings, its stained glass windows, its sculptures, its harmony of line and color all tended to bring to the mind and heart of the visitors the sense of awe and reverence in God's house; and then as the eye traveled to the altar (always the most beautiful part of the church), the sheer splendor of it told in thundering tones the whole motive back of everything else—that here is the dwelling place of Christ on earth—here is His home among His children—here is He, day and night, to listen to their petitions and console them in their sorrows.

The ideals of the church are the same today, but the spirit of our church builders is different. The clever real estate man presents a bargain in a lot, and the clergyman, not being too well supplied with funds, is easily convinced of its suitability—usually without any foresight for future needs. The architect is a good talker or a friend of some member of the building committee, and brings forth from his treasury plan No. 23, which has worked well in numerous other places. The contractor, figuring low to underbid competitors, does no more

*First National Bank Building, Oakland.

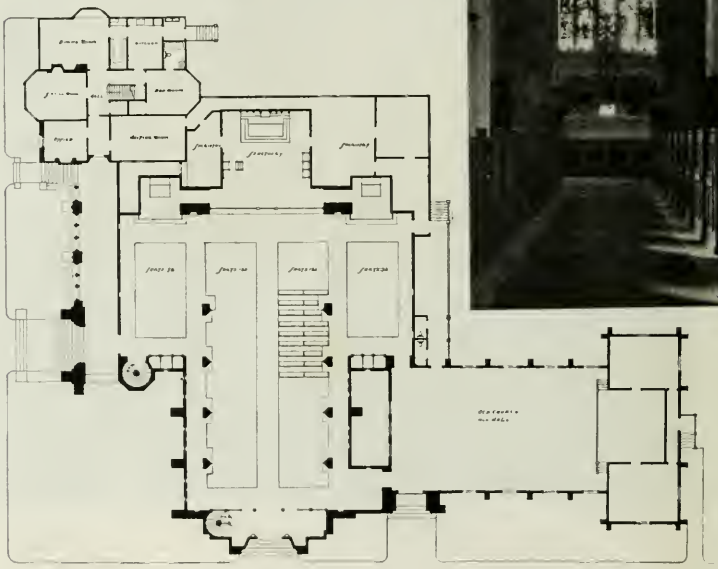
ALL SOULS' CHURCH, SOUTH SAN FRANCISCO
GEORGE E. McCREA, ARCHITECT

INTERIOR, ALL SOULS' CHURCH, SOUTH SAN FRANCISCO
GEORGE E. McCREA, ARCHITECT

than he has to. The manufacturers of pews, lighting fixtures, etc., have stereotyped patterns which can be indefinitely reproduced at low cost. The stained glass is bought by the yard. The statuary and paintings are usually tawdry and often discards from other congregations; and the result, instead of teaching the uplifting lesson so well taught by mediaeval churches, simply advertises a lack of good taste.

The usual western American group of church buildings consists of a church which proclaims in an indifferent manner that it is a place where people may be protected from the elements while attending to religious matters, but does not awaken any thought of reverence for the purpose for which it exists—a parochial house which in many cases has to be pointed out to a stranger as such—a makeshift hall of some sort; and a parochial school usually entirely unrelated either in location, style or composition to the rest. The most definite impression one gets is that each is a thing apart, jealous of and trying to extinguish its neighbor.

Most of these architectural nightmares have been due to the rapid growth of our communities. Churches of a more or less temporary character have been constructed rapidly and cheaply, with the hope that they would be replaced with more permanent and carefully studied structures in the future. These



PLAN AND CHANCEL, ALL SOULS' CHURCH, SOUTH SAN FRANCISCO
GEORGE E. McCREA, ARCHITECT

INTERIOR, ALL SOULS' CHURCH, SOUTH SAN FRANCISCO
George E. McCrea, Architect

pioneer days are largely over and we are settling down to a more stable form of life. As court houses, city halls, commercial buildings and dwellings are taking on a more permanent character, it would seem that our churches must follow in their wake—in fact, the churches, wherever possible, ought to be the leaders in this building up of ideals, and so it is to be looked for that the churches to be erected henceforth will begin to take on some of the appearance of the old inspiring structures of the middle ages.

This can be accomplished without the expenditure of vast sums of money. All that is necessary is to have architects of vision and ideals who can judiciously expend such money as is to be expended in excess of necessary structural costs, to convey through dignified and appropriate architecture the inspiriting message of God dwelling in our midst.

INTERIOR, ALL SOULS' CHURCH, SOUTH SAN FRANCISCO
George E. McCrea, Architect

Why Italians Prefer Stone for Building

One of the reasons why natives of Italy in America prefer to build stone houses instead of the usual frame structures is that in Italy the most common material for building is stone, and the Italians are more familiar with this material than wood.

This is said to be the reason so many stone houses are to be seen in the Italian quarter of some of the cities of the country and often in isolated places. There are fewer carpenters than masons in Italy, which is also partly responsible for this condition.

Another interesting fact is that Italians, as a rule, are very careful about the foundation and exterior of their homes. No matter what grade of finish the interior may be the exterior is usually well done, special attention being given to the stonework and trimming.

Who Is the Dreamer—the Architect or the Client?

Statement of a Fallacy

BEFORE the next onset of building, before the coming of the period again when the building industry will be humming as of yore, it might be well for architects to reflect on some of the things that in the past have led to criticism of the profession and practice in general.

Not the least among the ideas entertained by the great public, whose lack of information regarding the function of architects is due largely to the failure of the architectural organizations in America to educate the people to a better understanding, is that the architect "is a dreamer," and "unpractical."

This notion is not entertained so much among bankers and heads of large organizations that in the recent past have been involved in large building undertakings, and whose contact with their architects has given them a better insight. But the notion is nevertheless held by a great percentage.

Much can be done by architects to accelerate a reaction that will correct the fallacy.

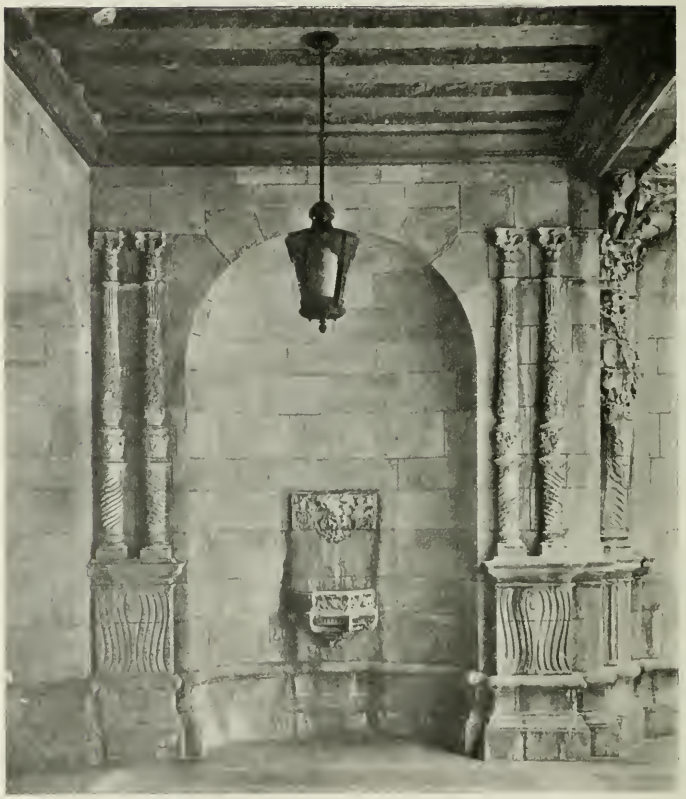
The impractical dreamers are not the architects, but the clients themselves, as a rule. The architect labors constantly to keep within reasonable bounds the unpractical ideas of a prospective builder. This does not refer to cost; the owner's extravagant notions of cost can be offset by a systematic presentation of plain figures—a convincing array of figures and cost data is evidence that a client can appreciate, for everybody has some conception of money value.

The trouble, however, that is not so easily set right by the architect, except by elaborate explanations that don't explain, is the ignorance of the client as regards the actual working conditions that surround the production of a building from the drawings, through the whole gamut, to completion. The client imposes unreasonable and unpractical conditions, some of which, to an experienced architect, are wild imaginings that have not even the saving grace of suggesting something that might prove workable.

The client is often the dreamer; the architect, even if he is the seasoned kind, has enthusiasm, imagination, inspiration, but is always the most practical of men. And not least of his usefulness is to hold the client down; and in spite of protests to produce for said client a building that will not be either inefficient or ridiculous, or both. Which means, in the long run, saving the client's investment for him, whether it be a home or a commercial structure.

Consider the daily routine of an average architect! How varied, detailed and essentially practical! Any profession whose chief concern is deadly accuracy, and essential permanency, as is the case with the profession of architecture, cannot indulge in unprofitable or reckless dreams. The daily problems that confront the architect are such as serve only to reinforce his already highly developed vein of practicality. If he dreams it is of things unconnected with his profession.

That the unpractical theorists and dreamers are not the architects, but is the client, is a fact that should be impressed upon the public by a course of education that will cite specific examples of just how often the architect saves Mr. Public from making a fool of himself. There are exceptions—but these serve only to emphasize the general rule.—Building Review.



INTERIOR COURT, RESIDENCE OF MRS. ANDREW WELCH, SAN FRANCISCO
WILLIS POLK & CO., ARCHITECTS *LEO LENTELLI, SCULPTOR*

DETAIL, INTERIOR COURT, RESIDENCE OF MRS. ANDREW WELCH
Willis Polk & Company, Architects

An Expression of Decorative Sculpture.—Leo Lentelli

By SADAKICHI HARTMANN

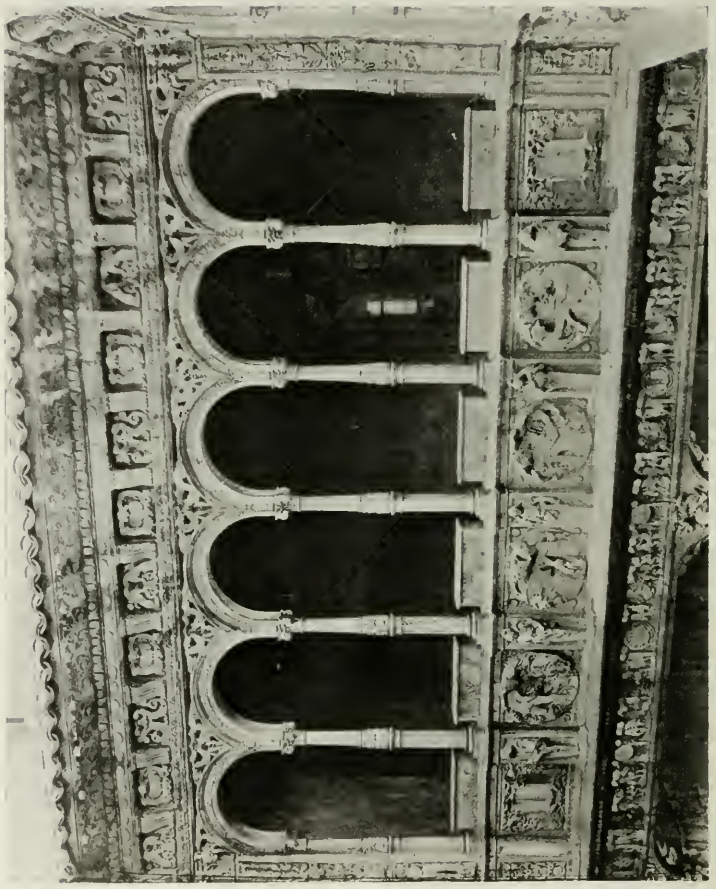
[*In the Welch residence herewith illustrated, the architect and the sculptor have sympathetically collaborated with a greater degree of success than perhaps has ever before been achieved in this country. San Francisco, as it has so many times heretofore, has again established a precedent in artistic leadership.*—THE EDITOR.]

FOR many years whenever the problem of decorative sculpture confronted an architect, the Thorwaldsen-Canova ideal ruled supreme. There was no escape from it. Not unlike the mural painters of today, who often paint easel pictures instead of mural decorations, the sculptors fell into the error of making smooth-finished exhibition pieces for the purposes of architectural embellishment, and in most instances, no matter how excellent the work was in itself, failed to produce the desired effect. And although the artists of the older school, like Ward, Hartley, Mead, Warner, St. Gaudens and French, occasionally produced creditable work in that line, they entertained a sort of idea that it was beneath the dignity of a real sculptor and kept aloof from it.

This was in the eighties of the last century. Phillip Martiny, a rare genius in picturesque invention and florid expression, was the one exception who, for a short period, practiced decorative sculpture as an individual art expression. By far the largest part of the work was in the hands of inferior workmen, who, like the architects, adhered to the Thorwaldsen-Canova ideal.

It was not before the advent of Karl Bitter and other exponents of the Viennese school that our eyes were opened to the possibilities of decorative sculpture. The Chicago, Buffalo and St. Louis Expositions afforded this innovation an excellent start and opportunity for lavish displays. And the Americans, always good adopters of new ideas, quickly followed suit.

"An exposition," as Karl Bitter has so aptly said, "offers wonderful opportunities to the young sculptor" eager to assert himself and to carry out some of the dreams that come so readily in our student days. There is a chance for broad, sketchy work, to sling about the unwieldy material at one's heart's content, and to make it obedient to one's will by



INSIDE COURT, RESIDENCE OF MRS. ANDREW WELCH, SAN FRANCISCO
WILLIS POLK & COMPANY, ARCHITECTS LEO LENTELLI, SCULPTOR

vigorous handling, to wrestle with the medium for days and to mould and pound the desired expression out of it, and all this to produce an effect of general popular interest. For exposition sculpture is on more intimate terms with popular appreciation than the sculpture on any public building. People who visit expositions are sight-seers—they are on the lookout for startling effects and eager to scrutinize and criticise, and it is the picturesque effect that wins out and lingers in the mind. The public does not know much about the technique of sculpture, but it feels unconsciously the charm of beautiful forms in sunlight, unusual pleasing shapes, and the interesting play of light and shade and color.

A good deal of this sculpture would not pass muster in the eyes of critics and connoisseurs, and it would hardly do for permanent creation or preservation in a museum, but it is alive and aglow in the particular environment of a court-yard of an exposition ground without startling and colorful backgrounds and surrounded by a gay and festive throng.

When Leo Lentelli, a native of Bologna, came to America, just before the St. Louis Exposition, the new idea of decoration had firmly caught root. Lentelli had served a thorough European apprenticeship in Rome, and good workmen were in demand. So he became a studio assistant for other sculptors, and the next few years saw him at work in well-known New York studios, as those of Massey Rhind, Niehaus, McNear, Kitson, Weinman and others. He could not help noticing the peculiar limitations of American sculptors—among others, the entire absence of so-called exhibition pieces—the ideal life-size figure in marble or bronze being almost an unknown quantity. Also the demand for busts and portrait reliefs was moderate. While the production of smaller bronzes, to serve as objet d'arts or bric-a-brac, was handicapped by the excessive price of casting, the artist finding it difficult to compete with the cheaper foreign ware that enters the states as merchandise and is sold as art. Of course, there were the everlasting portrait statues and equestrian figures of generals. They seem to be the real domain of the American sculpture; also the available material becomes more timeworn and exhausted with every year and can not be remedied unless new popular heroes step forth, as may be the case in our present war.

Thus, for an ambitious young sculptor, the vast and unexplored field of decorative sculpture offered the most generous opportunities for expression and success.

Lentelli slowly entered this field. He took part in various competitions, received the usual share of rewards, designed a family vault and a memorial tablet for Isidor Strauss. The first bigger chance came to him when he was asked to make the angels for the reredos of the Cathedral of St. John the Divine in New York. There had been an irreverent discussion whether angels were male or female, an argument that has nothing to do with sculpture and could have been brought about only by the sensationalism of a misguided press agent. To Lentelli sculpture means solely a given subject that he has to carry out in thought and technique to the best of his abilities. Some of the figures were quite large in size, and they were the first test of his now so well-trained ability of handling broad masses for pictorial effect. Already these figures show that Lentelli knew his trade. Rich in pictorial invention, skilled as a workman, and only thirty-three years old, he waited for his opportunity. And it came with the Panama-Pacific International Exposition. The principal difference of this and other expositions was the idea to lay out the ground in such a compact and concentrated fashion that the various build-

FIGURE PANEL, MEMORIAL MUSEUM, GOLDEN GATE PARK, SAN FRANCISCO
LOUIS C. MULLGARDT, ARCHITECT *LEO LENTELLI, SCULPTOR*

ings could be reached without obliging the public to walk miles from one place of attraction to another. And the scheme was carried out with something of the generous charm of the old pioneer spirit. Thanks to Jules Guerin and Karl Bitter, it was all color and light, an exploration into the realm of the picturesque, studded everywhere with statuary, columns and arcades.

The younger men were eager to participate and to contribute their individual note to this symphony of art expression. It was like a blaze in the Far West; also Lentelli could not resist the temptation—he came, and it was indeed a lucky star that led him to the Coast. He conquered easily and became a full-fledged, independent, artistic personality within the era of a few years.

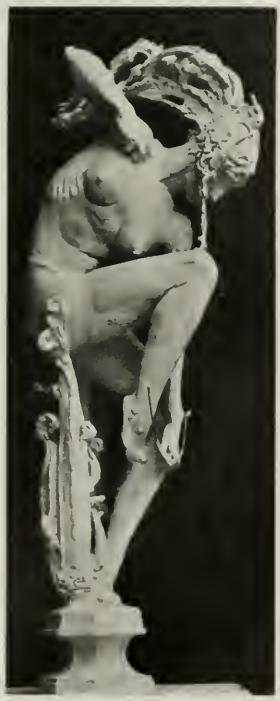
There were many new and surely not traditionally classic problems to wrestle with. Some of the equestrian statues were of enormous size, twenty-three feet high. A man could stand under the horse with still much space to spare. This meant an adjustment of conventional working methods. It involved new devices of construction and the figures had to be built up according to new laws of proportion. The actual forms had to be transformed into masses and planes that possessed primarily those pictorial elements that make an effect from below or from great distances.

Lentelli came out with drums beating and colors flying.

Some of the work he did in conjunction with Roth and Calder; but in his figures over the main entrance of the Palace of Fine Arts, in the figures of the Arches of the East and West and particularly so in his "Water Spirit" and the three "Aquatic Nymphs" in the Court of Abundance, he is recklessly and splendidly himself. They are unique experiments in form, definite creations of art, with a vital, colorful quality in the elongated limbs and distinctive features.

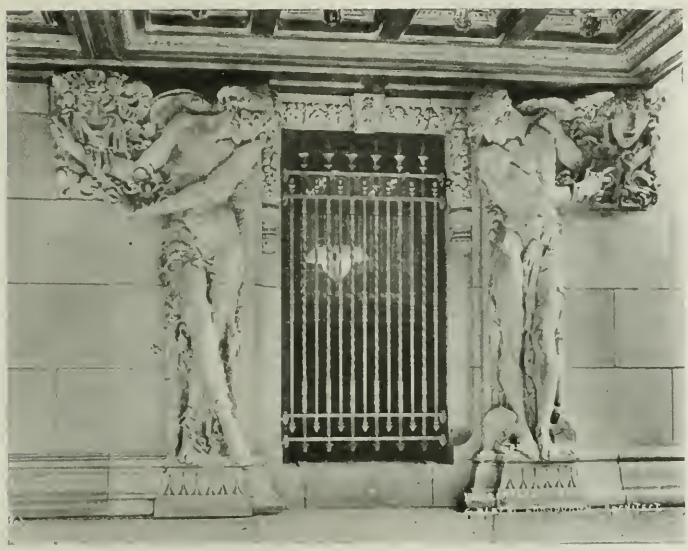
After the Fair had come to an end, most of the artists wended their way whence they came. Lentelli stayed. His work had only just begun. San Francisco needed him.

Orders came to him—even came from the outside, as, for instance, the Caryatides supporting the Marquise and main groups on the facade of the St. Louis Orpheum Theatre, Mr. G. A. Lansburgh, architect.



WATER SPIRIT
Court of Abundance, Panama-Pacific International Exposition

ORPHEUM THEATRE, ST. LOUIS
G. ALBERT LANSBURGH, ARCHITECT
LEO LENTELLI, SCULPTOR



ORPHEUM THEATRE, ST. LOUIS
G. Albert Lansburgh, Architect *Leo Lentelli, Sculptor*

GROUP OVER MAIN ENTRANCE, SAN FRANCISCO BRANCH LIBRARY
G. Albert Lansburgh, Architect *Leo Lentelli, Sculptor*

ANGELS, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK
LEO LENTELLI, SCULPTOR

one of the choicest, spontaneous bits of decoration that has been put up in any public building in recent years.

In San Francisco he decorated two of the branch libraries for Mr. Lansburgh and the new Memorial Museum in Golden Gate Park for Mr. Louis C. Mullgardt, architect. Among lesser things he made a well fountain for St. Francis Wood, modeled five mantels for the President's House of the Stanford University for Mr. Mullgardt, and added to the metropolitan aspect of Market street by designing the tops of the lamp-posts. Within the short period of three years Lentelli succeeded in creating a new method, if not a new style. The Lentelli method has made its lasting impression and it will take many years before the Lentelli Renaissance, as some of his admirers call it, will be replaced. Baedeker can no longer state, as he did, as late as 1910, that "the contemplation of sculpture in San Francisco could be dispensed with."

The best proof is the inside court of Mrs. Andrew Welch's private residence, Willis, Polk & Company, architects. It is typical of the Lentelli method, which almost amounts to a new technique.

The technique in conventional sculpture, as in the paintings of the Old Master, was generally smooth on the surface—invisible. The idea—the actual representation—told the story. The method of showing the brush strokes, as in Sargent's paintings, every brush stroke being made an expression of texture, is comparatively a modern invention, and the sculptors proved to be as modern as the painters.

It was the French sculptor, Carpeau, during the Second Empire, who, perhaps more than anybody else, made sculpture more pliable, more temperamental and fluid. The actual modeling in clay with all its delicate and virile touches are preserved in the finished bronzed and marble. Every touch added something to the total effect.

The technique of decorative sculpture went a step farther. Lentelli actually thinks and composes in shadow accents. In his work there are regular hollows and gaps, black holes that emphasize the form and altitude. His outlines are undercut as deeply and boldly as has ever been attempted before.

And the remainder, the actual form is modeled as flatly, in large planes of vague modulations, as it can be. Useless conventional details are omitted and carefully modified ornamentation introduced only where it helps toward a pictorial effect. It is the extreme of simplification.

Yet all the facts of proportion and roundness, lines and planes, are clearly stated. One might even say that they are over-emphasized. They are made to stand the test of practical demonstration of usefulness, as far as ornamentation can be useful.

Lentelli's works are not made for indoors. They are constructed to be seen in the open, in sunlight, or on gray days, and generally from a considerable distance and peculiar view points. It is not so much nature, art or symbolization they try to express, but something esthetically pleasant to look at, a spot of interest in an excursion among less attractive objects.

Even the medium is new. All the Exposition sculpture was done in cement, and Lentelli has stuck to it as his principal medium of expression. It is warmer in color, almost looks like granite when properly polished and gone over, is cast easily and less expensively and stands the inclemencies of the climate—rain, wind and mist—as well as any other medium.

By far the most important work Lentelli has as yet attempted are the five colossal figures (7 feet 8 inches) of Art, Literature, Philosophy,

Science and Law for the facade of the San Francisco new Public Library, Mr. Geo. W. Kelham, architect. They reveal the unexpected effectiveness of juxtaposition of deep lines and massive forms, of black accents and large, quiet planes.

They focus attention by their sturdiness of conception and attitude, their decorative expression, and a certain swing and freedom of handling, no doubt due to the new medium.

Lentelli, like all the younger men, has been greatly attracted by Rodin's work. Nobody's influence on modern sculpture has been stronger than Rodin's. It towers over all glyptic expressions. To Lentelli it taught the lesson to express only the necessary, to reduce everything to the essential.

He acquired something of beauty and value and made it his own. In a way one might say that the Lentelli method represents the Rodin spirit in decorative sculpture. Lentelli has widened the outposts of sculpture and added to the newness of form.

The aim and purpose of decorative sculpture is, in plain words, to make our street vista, entrances to public buildings, facades, staircases and rotundas more pleasing for ordinary and casual contemplation.

Lentelli has an absolute, firm grip of the material. He has furthermore, the gift to see the beautiful and to record it, even when brought face to face with architectural facts and the commercial demands of the day. Rarely has a sculptor combined the beauty of form and decorative effectiveness with a surer instinct, and in his future career he may rise nobly to opportunities for a larger utterance upon more exalted themes.

"AQUATIC NYMPHS," COURT OF ABUNDANCE, PANAMA-PACIFIC INTERNATIONAL EXPOSITION
LEO LENTELLI, SCULPTOR

A Bungle-ode

By ERN. FREESE

A BUNGALOW is a species of inhabitable mushroom that springs up over night on vacant lots. It might be more comprehensibly defined as the manifestation of a peculiar style of Western domestic architecture that causes lady tourists from the two-storied East to be precipitated into involuntary and rapturous comments, such as "Oh! How cute!"

Architecturally speaking, the bungalow is a composite of Swiss chalet, Japanese tea-house, Frank-Lloyd-Wright leaded glass, Spanish hacienda, Chinese influence, Mission furniture, monstrous originality, disappearing beds, and disillusioning appearance.

What? You are incredulous? Listen, then. Allow me to describe one of these bungalows as I hypothetically view it from where I sit. No, I shall first describe the whole flock.

"Flock" is the proper term. They appear to have just "lit," or as if flight were imminent. That is the first impression; restlessness and impermanency, created by the multiplicity of flattened-out gable roofs and enormous flapping eaves, all abristle with fantastically fashioned rafter ends. However, on further survey, it is realized with a jolt that if the bungalow proper takes to flight, at least a part will remain eternally anchored to earth. I refer to the huge piles of masonry—brick, cobblestones, concrete—that constitute the porch piers. For, behold, even though a bungalow have no foundation upon which to rest other than a two-by-six redwood plank, yet in the porch piers must there be at least ten tons of solid masonry to support the two-by-four raftered roof. Why mention the mysteries of ancient Egypt? Imagine future antiquarians discoursing as follows of the days in which we live:

"Huge piles of masonry still stand upon the sites of those ancient Western cities. The origin and purpose of these great and numerous Cobble-Isks are shrouded in mystery. The only rational theory by which we can account for their existence is that the people of that Peculiar Era did start to build what were then known as Skyscrapers, but that Land Values changed over night and the project was abandoned because there was no Money in it."

One bungalow in particular attracts my attention. The porch piers of this one are of cobblestones. And the cobblestones are studded with brick—for effect. The effect is that you wonder why the contractor neglected to furnish enough cobbles to finish the job. The rivers are full of them—not contractors: cobbles. They are a dominant note in the scenic grandeur of far Western rivers. These rivers are peculiar: they are upside-down most of the time That is to say, the water is underneath, the sand and cobbles on top! Hence, it is an easy matter to procure cobbles. You simply drive down the river and pluck them.

Well, as I have said, the porch piers of this particular bungalow are studded with brick—for effect. You have noted the effect—upon me. Wait. There are four of these great piers, all in a row. At the ground line they are perhaps six feet square, and they rise roofward in sweeping curves of the fourth or fifth dimension to the dizzy height of about seven feet. At this point, the sweeping curves have swept into tangency with the vertical. And here they terminate, two feet square, capped with a chunk of concrete half a foot thick. But the end is not yet. There still intervenes a space of two feet between the top of each pier and the over-

head roof-beam. And now—O ye of little understanding—I beseech ye to behold the monstrous originality of the bungalow builders! This intervening space of two feet is occupied by a four-by-four stick of timber that rests in supreme and supercilious stability upon its enormous base of stone. This construction is artistic. What? I repeat—artistic. It is moreover delightfully frank—not Frank-Lloyd-Wright: frank. For it acknowledges the fact that instead of a tonnage of masonry to support that paper roof, all that is actually required is a four-inch stick of Oregon pine!

In the end-spaces between these piers are described graceful catenaries. A catenary is no part of cat or canary. It is the curve described by a hanging chain. Perhaps I should have said that between these piers hang chains, describing catenaries. Then describing on my part would have been superfluous. These iron chains are firmly anchored at each end into the eternal masonry of the piers. They replace the antiquated classic balustrade—and they serve a useful purpose (beauty and utility should be co-existent)—they serve as swings for children. Not necessarily the bungalow-dwellers' children, but your children, my children, the children of the next-door neighbors, and the children of generations yet unborn. The chains are procured from the manufacturers of harbor dredges and also from the builders of steel derricks.

Farther along on bungalow row is what is technically known as an "aeroplane." This particular aeroplane is a bi-plane—that is to say, it has two sets of white planes—two paper roofs, one above the other. The upper roof hovers over a second-floor sleeping apartment. The walls of the sleeping apartment are set back, all around, from the walls of the story beneath. This is an aeroplane of the bungalow army. It is also a highly successful combination of freight-train-caboose and Japanese pagoda. And the Chinese influence is decidedly marked in the jig-sawed, tip-tilted rafter ends. Other influences are also in evidence.

Another bungalow exhibits a melee of original and startling timber work. The startling part of it is that it does not crash to earth of its own weight. Mighty timbers—with ends cut into every conceivable form of curve known to higher geometry, planing-mill mechanics and jig-saws—are piled up this way and the other ways in a bewildering and spiked-together intricacy that causes the beholder to gasp in unbelief. Theoretically, this bewildering intricacy is the "support" of the overhung roof. Theories are flexible and nebulous things. But the law of gravitation is an undisputed fact. Wherefore, these flapping, wing-like, overhanging eaves of two-by-four rafters sag under the very weight of their aforementioned "supports," and a typical bungalesque down-drooping roof curve manifests itself just beyond the wall line.

Have patience. Not yet have you learned all the wonders of the bungalow. Enter. Grasp the ponderous store-front handle of that four-by-six-eight slab of solid oak, and come in. Solid oak? Ah—vain and for the nonce are the front doors of the bungalow builders, for the paper veneer on that door is already wrinkling its back where the sun hits it. But come in.

Look out! Don't open the door too wide—'twill crash into the Mission rocker. And if the rocker starts rocking, 'twill smash the leaded glass of the book-case doors. Now look at the mantelpiece and the beamed ceiling. All of solid mahog—Oh!—one-by-six Oregon pine boards nailed together and stained—stained out of all semblance to Oregon pine boards.

You are curious as to the meaning of that lowered ceiling-beam occurring midway between the front door and the kitchen. Ho! Ho! Surely you are from the far, far East—mayhap from Massachusetts. Listen. That particular beam is the dividing line between this and that, "this" being the living-room and "that" being the dining-room.

Follow this path into the kitchen. Careful. Don't bump your shins on that seat-end. Oh, I nearly forgot—that built-in seat conceals the head-end of a perambulating bed. The feet-end projects into the bed-room closet. The roof of the bed-space is the floor of the closet, and the floor of the closet is three steps above the floor of the bed-room. If you stand up straight in the closet, you bump your head on the ceiling.

Isn't this kitchen a wondrous thing? In comparison, a dining-car kitchen becomes a vast and immeasurable space. Stand there by the sink. You can reach everything in the room.

And this is the bed-room. Where is the bed? In the wall behind that mirror. Step back into the kitchen and I will let the bed down. There! That's how it works. But now if you insist upon seeing the bath-room, I shall have to fold up the bed again or we shall have to crawl over it—we are on the wrong side!

Enough. I would a confession make.

* * *

Once upon a time, a very dear friend of mine casually remarked that she would "just love to live in a bungalow." Her casualness was affected. For she thereupon confided to me that she had one "all picked out," and that it was "the dearest thing." She had an acute attack of bungalomania. But, as I have said, she is a very dear friend of mine. Would I go with her and see that bungalow? I would. And I did.

"Isn't it just adorable?" she pleaded.

I repeat, she is a very dear friend of mine. So I didn't kill her outright.

I let her live and suffer.

We rented that bungalow!

*
* *

Landscape Architects Saved Government Money

Landscape architects, by careful planning of American army cantonments, have saved the federal government $800,000 on each cantonment, it was reported at the annual meeting of the American Society of Landscape Architects in New York.

The building of fourteen of the cantonments was supervised by members of the society. In each case the grouping of buildings and the installation and heating plants had to conform with the landscape and topography.

Speakers at the convention reviewed the work, showing how the decision to use two-story buildings saved space and money. Army officers gave up their own ideas when society members submitted their plans.

Grouping of buildings and location of parade grounds, roads, railroad terminals and power and heating plants was worked out by leading landscape architects. Many of the problems were new in America and work on the cantonments was begun only after all the plans had been completed and approved.

What the Chinese Use for Roofs

THERE is no such thing as a slate roof in China, for the simple reason that slates are not to be found, so it has come about that the Celestials have adopted tiles for roofing their houses. These, however, are beyond the means of the poorer classes, who have to rely upon the more insecure form afforded by straw or reeds. The very lowest strata of the population are even debarred from this and have to fall back on any scraps of material that come to hand. Such oddments as wooden boxes, old tarpaulins, old tin plates previously used for advertisements, sods of grass, reeds and cardboard have even been known to be used by the slum-dwellers.

The tiles used in the construction of houses of the better class are open to considerable improvement, and would be regarded with no small degree of wonderment in civilized countries, says a writer in the State Trades Gazette. Their color is black and their texture exceedingly coarse. The surface is rough and gritty and capable of inflicting scratches if scraped heavily by the fingers. The main essential of an effective roof covering is its incapacity to absorb moisture, and this quality is entirely missing in the Chinese tile.

With an alleged civilization considerably antedating the Christian era, one would have expected the art of building to have made more progress than it has done. If only in the method of laying tiles the crudeness of the methods still in vogue is exposed. These are not fixed and are simply held in position by the weight of the superincumbent ones. It is necessary for them, therefore, to have a considerable overlap. This amounts generally to three-quarters of the lower slate. What happens when the tiles become water-logged can readily be imagined. The weight becomes excessive, and when a heavy downpour sets in, the strain on the understructure is often more than it can withstand. Then there is another danger. China is the land of typhoons, and if one of the storms penetrates under the roofs, it may readily be imagined it causes no small havoc. The inhabitants frequently use the roofs as points of vantage or for cooling themselves when it is oppressively hot under cover, and for these and other reasons the roofs seldom look neat or symmetrical.

The tiles are curved and are laid in rows with the concave side uppermost. Between the rows are gutters, and fringing the bottom row are varied designs of flowers, gods, goddesses, etc.

* * *

Simple, When You Understand It

A large blueprint, covered with a mass of straight and curved and dotted lines, figures and symbols, had been found on the prisoner, and was now being examined critically by the chief of the secret service and his assistants; but they were unable to make it out.

"It looks to me," said the chief, "like it was the groundplan of one of our large munitions plants. You observe that here is the main building, here the magazines and storage warehouses, the railroads running into the plant here, and here the tenements where the employees are housed. However, we will call in Jones, one of our men who used to be in the building business and had to work from a good many of these things. Hey, Jones!"

Jones came in, and the blueprint was spread out before him. "It is somewhat intricate," said the chief, "but maybe you can tell us what it is."

"Easy," replied Jones. "It's an architect's drawing of a dormer window."

Fig. 8. The Choate Hospital as it now appears after additions and final remodeling.

The Transformation of a Dwelling House into a Hospital*

By EDWARD F. STEVENS, Architect, Boston

IN these days of tense feeling on the subject of the care of the soldiers at the front and of the desire on everyone's part "to do his bit," many offers are made of dwellings and of buildings of all kinds for the housing and care of returned or sick soldiers. Every hospital is throwing its doors wide open, and, in many cases, offering to double its capacity by utilizing its "waste" or unused space, or by erecting temporary units of portable or "knock-down" construction, or by the utilization of existing buildings near the hospital proper. Many of the fine palaces and beautiful homes in France and Belgium have served for hospitals during the present world war.

The larger and more symmetrical the house, the better the hospital it will make. Not every house will develop into a good hospital, however, for there are many essentials required by the hospital which are not required in the house. The house, if it is to be used as a general surgical and medical hospital, must have a room which can be adapted into a well-lighted operating room with its adjacent utilities; also rooms of sufficient size to accommodate a reasonable number of beds; and rooms for the cooking and serving of meals. When a house of this character can be found, then it is practicable to utilize it for a hospital, with proper care of details.

The selection of the house to be used must have the same care as the selection of a site for a new hospital; that is, there must be sufficient light and air about the building to insure good ventilation; there must be freedom from disturbance from adjoining property, and, if possible, a pleasing view from the building. Care should be taken to select a house where the sunshine penetrates the principal rooms.

The transformation of a house into a hospital, illustrating this paper, has been made by me at two different periods—in 1900 when the old Choate homestead at Woburn was given to the Woburn Charitable Society, and again in 1916 when that institution, growing from the small beginning, was developed into a hospital of moderate proportions and capable of still further increase.

* Illustrations courtesy of The Modern Hospital.

Fig. 1. The Choate homestead at Woburn, Mass., as it originally stood.

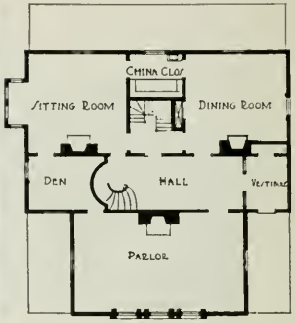


Fig. 2. First floor of the Choate homestead before modification.

In the first development it will be seen how, with very modest changes, a fairly workable hospital was evolved. The exterior of the Choate homestead (Fig. 1) was of the type one often encounters in New England especially, built in the sixties, with great double parlors, heavy cornices and finish, stately dining room and serving pantry, and basement kitchen. All of this, however, lent itself to "hospital treatment," as will be seen by comparing the plans of the original house (Figs. 2, 3) with those of the replanned hospital (Figs. 5, 6, 7). The funds available for alterations were small and the changes necessarily restricted.

The grand parlor made an excellent five-bed ward without change, while the sitting room served as a children's ward, and the little den as the hospital office. The circular stairs had to go, and were replaced by more commodious stairs, up which the stretcher could be carried. The dining room was cut into a corridor, a serving kitchen and a linen closet. The garden porch served as an airing balcony.

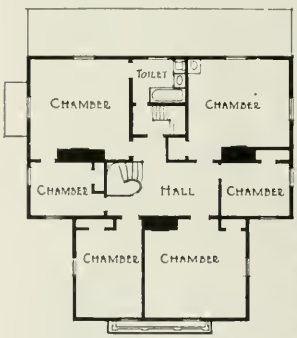


Fig. 3. Second floor of the Choate homestead.

Fig. 4. The Charles Choate Memorial Hospital as produced by the first modification of the Choate homestead.

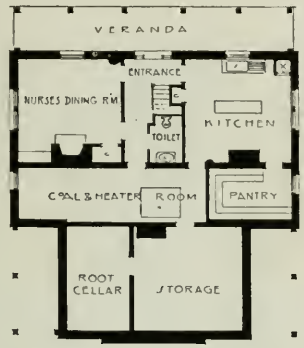


Fig. 5

Basement floor plan of the Choate Hospital as first remodeled. The laundry has been made into a nurses' dining room; otherwise little change has been made.

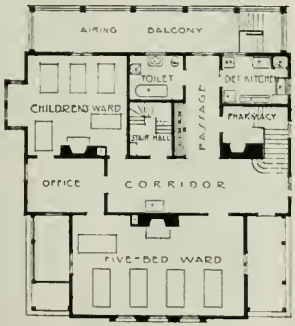


Fig. 6

First floor of the Choate Hospital after first remodeling. The parlor and sitting room have been transformed into wards; the den has been made into an office. The circular stairway has been removed.

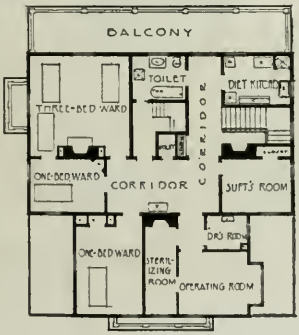


Fig. 7

Second story of the Choate Hospital after first remodeling. One large bedroom has been transformed into an operating room and another into a diet kitchen. The others have become wards and superintendent's room, respectively.

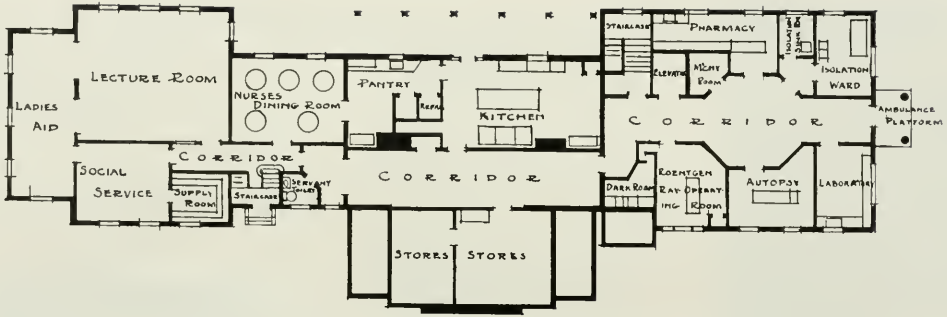


Fig. 9. Ground floor of the Choate Hospital in its present form. In this and the succeeding plans the added wing on the right is known as the Dr. John M. Harlow Surgery and the one on the left as the William B. Beggs Memorial.

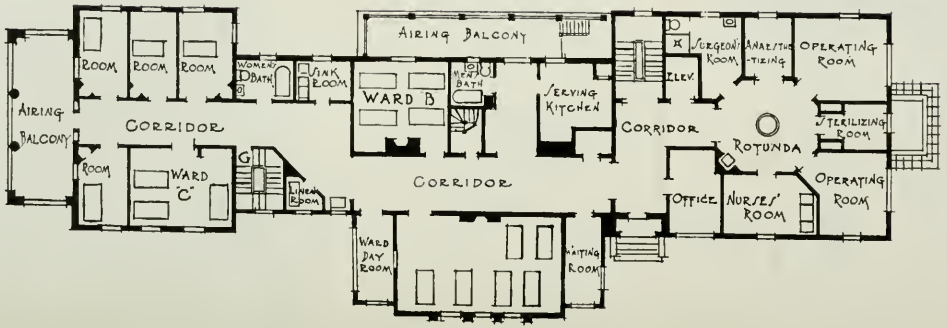


Fig. 10. First floor of the Choate Hospital. The operating rooms and other rooms in the surgical suite center about a rotunda, in the center of which is a surgeons' scrub-up fountain.

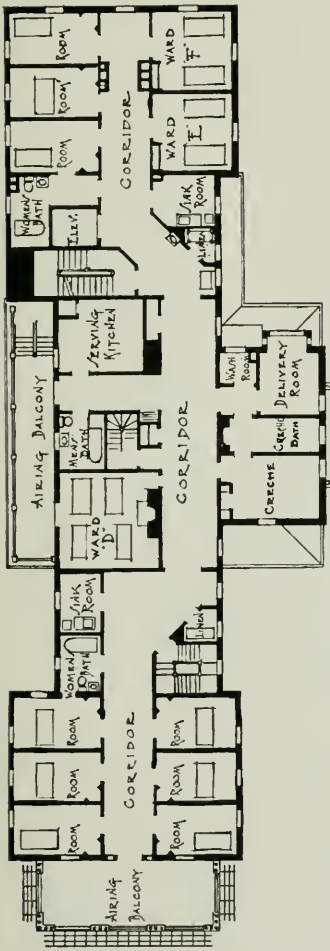


Fig. 11. Second floor of the Choate Hospital. The former operating room (in the center) has been taken as a delivery room.

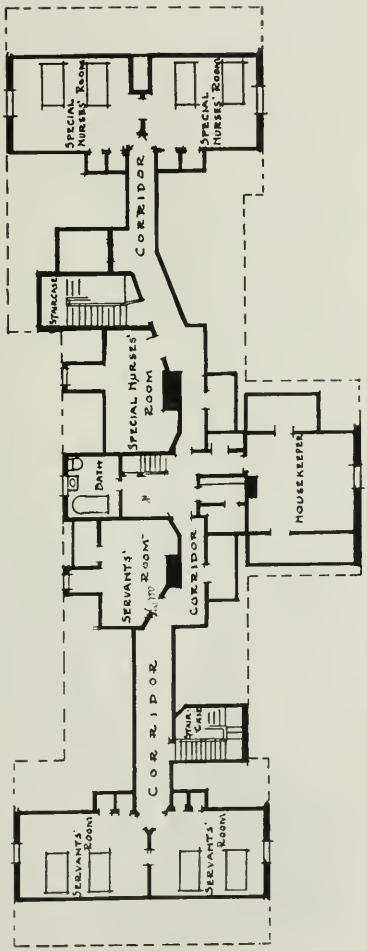


Fig. 12. Attic floor of the Choate Hospital, devoted to housekeeper's, special nurses' and servants' rooms.

The second story also developed simply and inexpensively. A good operating room and accessories were made from one of the large chambers, while another served as a second-story serving room. The balcony was extended to this story.

The changes in the basement were small. The kitchen needed no change; the old laundry served nicely for a nurses' dining room; in the attic, the servants' rooms were used for nurses. Thus the Charles Choate Memorial Hospital started out as a complete fourteen-bed institution.

During the eight years of successful management after the opening, friends of the hospital, seeing the splendid work being accomplished with the simple equipment, came to the rescue with bequests and generous donations, so that in 1916 the much-needed expansion was authorized.

To plan for the growing needs of the present and the future and to preserve and bring into harmony as much of the old building as possible with the new was the problem now to be worked out. The greatest needs were, first, better operating facilities; second, more private rooms; and third, a maternity department worthy of the name.

But few changes were necessary in the original building, as will be noted on plans (Figs. 9, 10, 11, 12). The kitchen was enlarged; the old nurses' dining room was made into cold storage and a serving room for the new dining room; the stairs were removed and the serving kitchens enlarged; the old operating suite was turned into a maternity delivery room and bath room, and one of the private rooms taken as a creche.

The new portions are planned to meet the deficiency of the old building and the growing needs of the community. A new main entrance and office are created, and a new operating department is provided.

The operating department consists of two north-lighted operating rooms, a sterilizing room, an anesthetizing room, a nurses' work room, and a surgeons' locker and dressing room. All these rooms are grouped around an octagonal rotunda, in the center of which is a triple scrub-up fountain, designed not only as a necessary utility, but also as an architectural feature of the department. The base of the fountain is of mosaic; the bowl is porcelain enameled, 40 inches in diameter; the water is controlled by the latest type of elbow valves; and the whole is surmounted by a utility shelf of opal glass. The large size of the rotunda leaves ample room on all sides for the wheel stretcher to pass. The floor of this department is of terrazzo and the walls are enameled hard plaster. Large north windows, extending above the ceiling, give the best of daylight, while four special artificial lights illuminate the operating rooms at night.

The ambulance entrance is below the surgical department and adjoins the laboratory, the x-ray, and the autopsy rooms. A small isolating suite, with special plumbing, is provided, as well as drug and storage rooms.

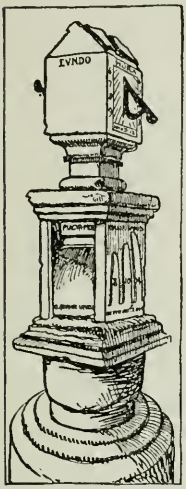
In the basement of the medical wing are located the nurses' dining room, the lecture and ladies' aid rooms. An automatic electric elevator connects all stories. The first story of the medical and the second story of both the surgical and medical wings are planned for private patients, mostly single rooms being planned. At the south end of the building airing balconies are provided.

Sink rooms, toilets, baths, and linen rooms are arranged for the efficient carrying out of modern hospital service. The floors of all wards, rooms, and corridors are covered with linoleum; the doors are without panels; and all detail of finish is of plain, simple construction.

For the mechanical plant, the old stable was utilized, affording plenty of room for the heating and laundry equipment. These remodeled buildings, with the nurses' residence on the same site, make a complete 33-bed hospital.

Old Sundials*

Random Notes Concerning Items of Interest in Various Parts of England



Sundial at Trelleck, near Tintern, Monmouthshire, set up by Lady Probert, who died in 1676.

ALWAYS have I loved sundials. They belong to the gardens of old romance; they tell the hours in churchyards, where the hours no longer mean anything at all to the quiet concourse around; they are found on the walls of ancient castles and manor houses; they have no part with modern things, and are ever grave and reverend. Their dissociation from the fitful and strenuous doings of our own age was never so marked as it is now that "daylight saving" has become a feature of summer time. The sundial will not bear false witness. When the sun shines—the only hours when a sundial comes into action—it is no use pretending it to be already afternoon when the shadow cast by the gnomon clearly shows it to be only close upon twelve midday. Such a discrepancy, I have no doubt, gives on many a church tower a flat contradiction to the Act of Parliament, but I personally have noticed but one church where the sundial on one side and the clock dial on the other are so placed that they can both be seen in one glance, telling two tales. This I observed at Berkswell, near Coventry.

The most interesting sundial I ever encountered is that really fine example at Trelleck, near Tintern, in Monmouthshire.

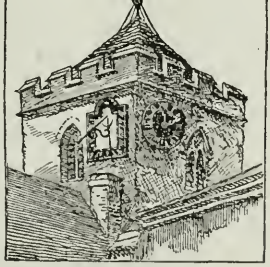
Trelleck is a decayed and forgotton townlet not often visited. There are ancient Roman cinder-heaps there, the remains of extinct iron furnaces; there are medicinal wells, of which no one now partakes; and there is a great grassy mound which some say was the castle mound of a fortress built by the Clares, and some maintain to be the burial mound of the Welsh who fell here in a great battle in which Harold the Saxon was victorious.

Also there are the Three Stones, which are very important indeed. That is why I have reserved them to the last, for they give the place its olden Welsh name—"tri llech," the Three Stones.

These three monoliths stand in a field near the church, and are thought to be commemorative of Harold's great fight, but they are probably much older.

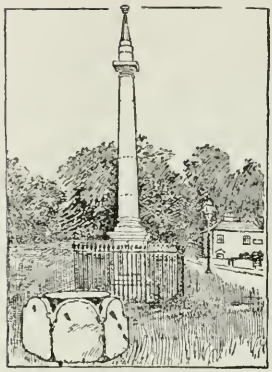
Lastly, there is the sundial; a real beauty. It stands in the garden of the schoolhouse, some eight feet high, and, when last I saw it, was mounted upon an ancient font brought from the church at some former restoration.

This sundial was set up by one Lady Maud Probert, who died in 1676. It bears on three of the four sides of its pedestal



The old time and the new. Sundial and clock in the tower of Berkswell Church, near Coventry, Warwickshire.

* From The Autocar.



The "Seven Dials" pillar, on the village green at Weybridge, Surrey. Inset is a drawing of the original six-sided dial stone.

representations of the great mound, the three big stones and the well, with Latin inscriptions which, being translated, read: "Great in its mound; O! how many are buried here. Greater in its stones; here Harold was victor. Greatest in its springs."

Around the sundial itself runs the inscription, "Eundo hora diem depascit": "As it goes, so the hour consumes the day."

I am amused, by these old sculptured things, by the figures 8, 10, 14, carved on the representations of the three standing stones, indicating their respective heights and by the two glasses under the carving of the medicinal well, of whose fount no one ever now partakes.

Scarcely less interesting is that old pillar which once stood in the west-central district of London, and gave a name to the once-notorious locality of "Seven Dials."

This ornamental column long ago left London for a change of air, and will be found on the picturesque village green at Weybridge, Surrey, an expanse of turf that still commands somewhat rural views, although Weybridge itself has ceased to be anything in the nature of a village.

It was about 1694 that the St. Giles-in-the-Fields region of Holborn began to qualify its name and the builder commenced to plan streets there and make it part of London.

The westerly march of the Metropolis has rendered it impossible to find fields until you have gone another ten miles or so, but as "St. Giles-in-the-Fields" the parish remains, even though the late lamented "St. Giles's Board of Works" and other local entities are swallowed up in the modern "Borough of Holborn."

I do not propose to enter into all the squalid history which has made "St. Giles's" a pseudonym for "misery, hunger, and dirt," as Tom Hood phrased it when seeking a rhyme for "shirt." But it would be interesting to go into the reasons why "St. Giles's and St. James's" have made a popular antithesis in the way of social extremes.

Anyhow, it is quite certain that those who planned St. Giles's did not contemplate creating a slum. No one, I think, has ever done that. Hard by Drury Lane and the Lane of St. Martin, Great St. Andrew street runs to a point where seven streets radiate. It is a curious, and not admirable, specimen of town planning.

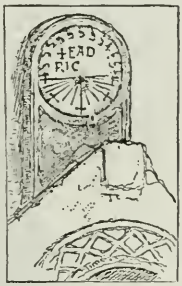
> "Where fam'd St. Giles's ancient limits spread,
> An in-railed column rears its lofty head;
> Here to seven streets seven dials count the day,
> And from each other catch the circling ray."

Thus wrote the poet Gay in his "Trivia," but he was inexact. We expect that in poets. He is, however, inexact amid a vast multitude. In point of fact the original plan contemplated only six radiating streets, a seventh—that of Little St. Andrew street—being afterwards added. But in the meanwhile the column had been set up.

That rather priggish old Evelyn who was contemporary with Pepys wrote in his diary, 1694: "I went to see the building near St. Giles's, where

seven streets made a star, from a Doric pillar placed in the center of a circular area, said to be built by Mr. Neale, introducer of the late lotteries, in imitation of those at Venice."

On the summit of this column was placed a large six-sided stone, with a sundial on each of the six sides, corresponding to each one of the originally-intended streets. Hence the popular name of "Seven Dials," which arose—as I think I have now succeeded in demonstrating—from a confusion of thought between the number of streets and the dials facing them, together with the common failing exactly to observe the most familiar every-day object.



Eleventh century sundial at Bishopstone, Sussex.

And thus the six-dialed "Seven Dials" pillar stood until July, 1773, when it was overthrown by a party of romantic desperadoes who had conceived the quaint notion that treasure was concealed at the base. They excavated it, and found the spot as empty as their own silly heads.

The stones were not replaced, but occupied a neglected corner in a stonemason's yard for many years. In 1822 they were purchased by the villagers of Weybridge, and re-erected at Weybridge as a memorial to the Duchess of York, who died at Oatlands in 1820.

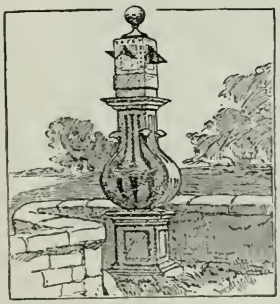
And there we see the pillar today, surmounted by a crown, instead of the stone of the six dials, which, when last I saw it, was in use as an upping-block for horsemen, in front of the adjoining "Ship" inn.

The holes in the stone, in which the gnomons of the dials had been fixed, were still visible.

Of course, sundials afford the readiest opportunity for displaying the cheapest and most obvious morality. Not very often has the giver of a sundial been able to restrain himself from causing to be carved upon it such admonishing thoughts as "Trifle not. Your time is short."

Fortunately these distressing and illnatured warnings and truths are generally veiled in the decent obscurity of Latin and Greek, which few other than learned and superior persons of my sort can understand.

I hate that sort of thing. I left a home to which I was dearly attached by every tie because that hymn which tells us we shall all be dead in a few years' time was played daily by a new carillon from the church tower. I do not want to eat that thought daily.



Sundial on Wilton Bridge, Ross, Herefordshire.

Myself, I do not esteem moral sundial maxims at a great price. As before remarked, they are too obvious. But when they are also ungrammatical then, indeed, is the lesson even more in danger of being lost.

Take, for example, that sundial which stands as part of an ornate pillar on Wilton Bridge, spanning the River Wye at Ross on the Monmouth Road. It is placed in one of the projecting sanctuaries, and has four dial-faces, with the inscription:

"Esteem thy precious time.
Which pass so soon away;
Prepare then for Eternity,
And do not make delay."

Horrible jingle!

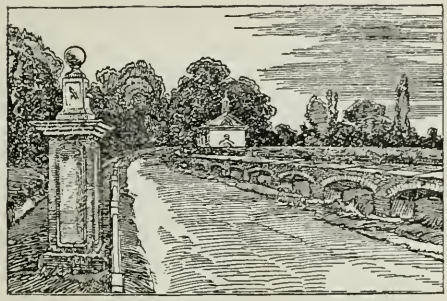
A Group of Modern Sundials

Sundial designed and built by G. Rognier, San Mateo California

Sundial, Estate of Mrs. D. T. Murphy. Burlingame, California

Sundial, Estate of Mrs. Andrew Welch, Hillsborough, California

There is just as bad to be found on the sundial set beside Maud Heath's Causeway. Some day, when space permits, I will tell you about that famous causeway across the low-lying lands near Chippenham, Wilts., but at present all that can be done is to refer to the pillar there with three dials.



Sundial on Maud Heath's Causeway, near Chippenham, Wiltshire.

It was erected in 1698 by the trustees, and Latin inscriptions were carved. In 1828 Canon Bowles, of Bremhill, persuaded the then trustees that, as few people could read Latin, these moral sentiments were wasted; and he obtained permission to place his own English renderings beside the originals.

On the side facing the rising sun we read:

"Volat Tempus
"Oh! early passenger, look up, be wise,
And think how, night and day,
Time onward Flies."

Facing noon we read:

"While we have time, do good.
"Quem Tempus Habemus, Operemur Bonum.
"Life steals away—this hour, O Man, is lent thee,
Patient to work the work of Him Who sent thee."

So far I do not object very greatly; but the dial turned toward the evening sky, if literally read, is depressing:

"Redibo. Tu Nunquam.
"Haste Traveler! The sun is sinking low;
He shall return again—but Never Thou."

I would rewrite that in this automobile age somewhat as follows:

"Tourist, buck up! nor linger long behind,
And light your lamps—lest you perchance be fined."

It is not good poetry, but it is no worse than Canon Bowles's, and it is awfully true.

My friend, the late Sir William Schwenk Gilbert, partner with Sir Arthur Sullivan, had a sundial on the lawn at Grim's Dyke, his place near Harrow. He was visited by many admirers, among them a lady who said she doted on sundials. "Is there an inscription on yours?" she asked. "Yes," said Gilbert, "Army and Navy Stores, where I bought it."

* * *

Why Some People are Plumb Crazy

A great hole had been torn in the side of the householder's house, and the kitchen floor was covered with fallen plaster, splintered lath and other debris.

"Cyclone?" asked the visitor.

"Nope—plumber."—Exchange.

Problem of Industrial Housing Is One of Practical Economics

By NOBLE FOSTER HOGGSON

THE problem of properly housing employees has reached such an acute stage that it is one of the biggest questions of the day. Yet the problem is not a new one. It has been with us for many years; the situation has simply grown more tense.

Last year, in one great factory in the East, thirty thousand men were employed to keep up a payroll of ten thousand! The men would not stay because of poor living conditions. This tremendous waste of efficiency could have been avoided through the medium of proper industrial housing. This instance is characteristic of conditions in America today.

Production is greatly handicapped, not by a lack of labor, as commonly supposed, but by an utter lack of decent accommodations and the resultant inability to hold labor.

Houses for industrial workers must be provided at once, and in the fact that this problem is so urgent there is a real danger—the danger of doing the thing hurriedly, planning for temporary relief only, creating conditions that will be worse in a few years than they are at present.

The large industrial organizations confronted with a housing problem will wisely provide for the future. With the splendid examples of garden city development in England as a guide, and the avoidance of the paternalism and other errors which characterized certain previous housing enterprises in this country, there is no reason why we should not proceed on the firmest and most advanced basis.

Each industrial development presents an individual problem. It is not simply a matter of designing two or three typical houses and setting them down on a certain plot of ground. The factors involved call for not only a thorough knowledge of housing developments the world over, but they necessitate an intimate study of the conditions affecting the industry which contemplates a plan for providing homes for its workers.

The matter of financing is one of the most serious drawbacks to providing adequate housing facilities just now. Many industrial concerns would proceed with a vast amount of building were it not for the lack of funds. In England, where it is announced that 500,000 houses are now urgently needed—some authorities say 1,000 000 houses—Government aid in financing has been promised. It is reported on good authority that England spent a half billion dollars on industrial housing during the last year and plans to spend a billion in 1918.

In this country appeals from industrial organizations confronted with the problem of housing their workmen are being made to the Government for assistance, and it is absolutely essential that some financial aid be extended, and this assistance will no doubt be arranged for very soon.

* * *

Since the above was written Congress has passed a bill appropriating $50,000,000 to be used in the construction of workingmen's cottages for housing the vast army of workers in the various ship-building plants. It is stated that several hundred homes will be built in Oakland and Alameda from Government funds.

Concrete Building Resists Earthquake

February 20th, 1918.

EDITOR The Architect and Engineer: As you know, we are large importers of mahogany from Central America. We have just received a letter, dated January 28th, from our mahogany people in Guatemala describing the earthquake, and they state that the only building which withstood the temblor in Guatemala City is one of reinforced concrete. This fact, we believe, will be of interest to architects and builders.

Following is a translation of the letter as we received it:

Guatemala, C. A., January 28, 1918.

Messrs. White Brothers, San Francisco, Calif.

Dear Sirs: We have received your appreciated letter of the 11th inst. lamenting the great catastrophe with which we have been afflicted and which has totally destroyed our capital and other cities. We thank you very much for your expressions of sympathy for the people of Guatemala, a city which is truly worthy of another fate.

The earthquake, or rather earthquakes, even up to this present time have not ceased. This very moment as we write the earth is trembling. We believe this disaster has no precedent in history, not only on account of the force of the shakes, which do not permit a man to stand on his feet, but because of the quantity of temblors, as they are counted by thousands.

Fortunately the first strong "temblor" of the 25th of December did not demolish the houses of good construction and this gave us time to get out into the street with our families. On this account we personally have not had to lament any accidents among ourselves. We now have our families in the plantations and we go with frequency to the ruins of the capital to dispatch our business. In the entire capital there remains only one house standing, and that one is of reinforced concrete.

The American Red Cross has sent missions which are lending much aid and alleviating in every possible way the situation of the poor people.

Repeating to you our thanks for your fine expressions of sympathy, we are,

Yours very attentively.

* * *

We might state that most houses in Guatemala are built of adobe, some few being made of brick, and one story is the rule. Our correspondent does not state that the building of reinforced concrete which remains was the only one of this construction in Guatemala City, but former residents of the stricken city tell us that there was no other.

Yours very truly,

WHITE BROTHERS.

C. H. White, Manager.

* * *

Present and Future Position of the Engineer

IN a brief address delivered January 16 at the installation of the New York Chapter of the American Association of Engineers, Mr. Edmund T. Perkins, consulting engineer, Chicago, summarized in an excellent manner the reasons why engineers do not occupy the position and standing in society to which they are entitled. The address also pointed out the remedies.

There are 56,000 engineers enrolled on the membership lists of the various engineering societies of the United States. This easily indicates a total of 100,000 engineers in active practice throughout the United States. The profession has existed and been recognized for a century and shows a remarkable growth in numbers, but unfortunately does not

show an equal growth in position and standing in the communities, for the engineer has been too much engaged with the complex problems that arise in his daily labors to reflect on the part he has actually played or should play in the present conditions of society.

It has been said that the engineer is all head and no heart. This may be true of the composite head and heart of the engineering profession, but there is no more companionable, congenial, lovable man among his familiar associates than the engineer.

Now, while the engineer himself is to blame for his present position, a greater amount of blame can be attached to our engineering organizations and societies. For, with the exception of the American Association of Engineers, there has not been one engineering organization or association which deals with the human side of the engineer. This one exception has awakened to the fact that engineers are not occupying their full position of usefulness.

We have considered politics as undignified and corrupting. It is true there are corrupt politics, but this is so because men who should have kept them righteous have stood aside.

There is no class of educated people more bound to traditions in this regard than the engineer. No one has made slower progress towards collective efficiency. We must join together, we must co-operate in working out reforms. A technical education never made a real engineer; 40 per cent of his work has to do directly with humanity, rather than with technicalities. In the past the trouble has been:

Too much modesty—too little public interest.
Too much independence—too little co-operation.
Too much technicality—too little humanity.
Too much aloofness—too little goodfellowship.

The engineer of tomorrow, if he is to assume and maintain the position in society that his past achievements have entitled him to, must become a man of larger sympathies and wider visions. He must play more and work less by himself. He must aspire to hold the honorable offices of the state, that he may administer them for the public welfare. He must be an arbiter, not an advocate, and he must have for his watchwords—Service and Co-operation.—Engineering-Contracting.

* * *

The Art of Brickmaking

THE use of brick dates prior to the time to which our histories reach, write Chase and Clow in "Stories of Industry." In fact, it is said "that the children of Seth, the son of Adam, built two pillars, one of brick and one of stone, and they inscribed upon each of them the discoveries they had made concerning the heavenly bodies, so that their inventions might be preserved to mankind and not lost before they became sufficiently known."

Brick was the building material of the antediluvian days, and it has continued to be building material down to the present time.

Knowledge of the art of brickmaking has probably at no time become entirely extinct, but after the Fourth Century, in sympathy with the decline of all other arts and the dying Roman civilization, the knowledge of this art gradually expired, and was lost to Western Europe. The art of brickmaking did not revive in England until the Thirteenth Century;

only a few instances of Fourteenth Century brickwork occur, and they are toward the close of the style; but in the Fifteenth Century brickwork became common. Until the first quarter of the Seventeenth Century the bricks made in England were of many different sizes, but by Charles I, in 1625, their size was regulated and made nearly uniform. After the great fire of London, in September, 1666, brick was made the material universally used in the reconstruction.

In 1784 bricks were subjected to taxation by George III, which burden was not repealed until 1850, and it is from this period that the general improvement in brickmaking machinery commenced in both the United States and England.

A good authority says: "Perhaps there is no process so easy to describe and yet so hard to execute as the making of brick"; and we may well believe it.

Each little detail of digging, kneading, molding and burning the clay seems to be so simple that it would appear that almost anyone could make a good brick, if he only had the necessary materials.

But, indeed, a great deal of experience and much skill are needed to produce a first-quality brick.

There is a great difference in the nature and quality of the clay found in various localities. It contains much mineral matter, chiefly sand, iron, lime, magnesia and potash.

It is the iron which makes the reddish color, and bricks range in color from yellowish cream to dark red.

Blue bricks are made from the same clay as the red, by some peculiar process of controlling the supply of air in burning, and by carrying the heat slightly further.

Bricks in the United States and Europe are generally red, but some clays produce yellow bricks, as, for, example, the Milwaukee brick, which is so much used as an ornamental building material. Bricks in China and Japan are of a slaty-blue color.

* * *

How to Avoid Efflorescence on Face Brick

PROBABLY one of the things most annoying to architects and owners of brick buildings constructed in recent years is the unsightly appearance of efflorescence on the brick every spring, in some cases completely covering the upper stories.

It has been noticed that this is more pronounced under the copings, sills, belt courses, etc., or wherever a part of the building has been subjected to a greater wash by water. This indicates that the mortar, as well as the brick, is absorbent, causing the walls to become thoroughly soaked during the winter months, while the warm rays of the sun attract the moisture to the exterior, bringing with it the lime, magnesia, and alkali salts contained in both the brick and the cement mortar.

It is agreed by all interested in brick construction that both brick and cement mortar are absorbent, yet little has been done to overcome this objectionable, serious and dangerous obstacle. Hydrated lime will add to the plasticity of the mortar, increase the density, and, being a water retainer, will add crystallization when used in places where it is difficult to apply water at frequent intervals. Tests have repeatedly shown that slabs containing 10 per cent hydrated lime, when taken out of the water, after one hour will contain

a larger percentage of water than a similar sample of cement and sand, yet on the surface the lime sample is apparently bone dry.

The best-known solution of the above problem, which has withstood a test of over two years, having been adopted in the construction of a prominent Eastern college, is impervious cement mortar to consist of:

One part approved portland cement.

Three parts sharp, clean sand, showing not over 35 per cent voids by water.

Ten per cent of weight of the cement of hydrated lime (sufficient to add to the plasticity of the mortar and retain enough water to perfect crystallization).

Two per cent of weight of the cement, Medusa paste waterproofing. Each gallon (eight pounds) to be mixed with equal parts of water, later adding twenty more gallons. All mortar to be gauged with this solution.

If the sand is damp, a one to fifteen solution should be used to offset the moisture already in the sand.

All exterior brick and stone work to the depth of 12 inches should be embedded in this mortar.

The extra cost of waterproofing the cement mortar will not exceed $1 per M. bricks.—Exchange.

* * *

The Architect's Place in Home Building

THERE are two things the prospective house builder wants," writes Mr. H. A. Sullwold, an architect, in the St. Paul Pioneer Press. "First, he wishes a living room, a dining room and a kitchen downstairs, whether he earns $10 a week or $200. In the second place, he wants his own ideas expressed in his house, even if they tend to pink cement and purple paint or cement blocks and five-foot eaves. He hires an architect and then many times does not use his ideas. The usual expression is, 'It's my money I'm spending; I ought to be able to do what I want with it.'

"The time will come when the architect will sign his name to his finished work, even as the artist does his today. Then his client will not go to any architect with demands for wide eaves or Doric porches; he will go to one who has developed a style or styles which permit of those things, or at least one who is in sympathy with his demands. An art connoisseur tells his friends he has chosen a Rembrandt. So this man will exhibit a pride in having a certain architect.

"Given a certain number of square feet of lumber, a fixed amount of stone or concrete, a fixed sum for labor, and so on down the line, a prospective builder will get a better house and a more artistic one by employing an architect than by not.

"He must not hamper the architect, however, by insisting upon certain brick, or certain shingles, or certain other materials if he expects to get everything an architect has to give. The architect has spent years of schooling and apprenticeship so as to be capable of giving the correct artistic and constructive advice. It is his aim to spend time on the work, many times working out details on the job with the workmen, to imbue them with the spirit of creating something that will add to the character of the people who will occupy the home when finished.

"If, therefore, you are one of the lucky ones, who take pride in your house because a certain architect designed it, and you know it is good because of that fact, it is bound to influence your life and that of your children just as a good painting on the wall of your hall may influence those who live with it. You may not at first appreciate all of its worth or refinement, but it will grow, even as the knowledge of a good painting grows."

Mr. Geo. Alexander Wright, A. I. A.

MR. GEO. ALEXANDER WRIGHT, the senior member of the firm of Wright & Rushforth, architects of San Francisco, passed away on March 2, 1918. Mr. Wright was stricken while at his office desk with paralysis on the left side, which resulted fatally ten days later. He is survived by a widow and three daughters, the eldest the wife of Mr. Marsden Manson, C. E.

Mr. Wright was born in Portsmouth, England, in 1852, and received his architectural training with Mr. Alfred A. Hudson, architect, Southsea, England, and from 1880 to 1885 with Mr. Thomas Hellyer, architect of Ryde, Isle of Wight. He then assumed practice as architect and surveyor at Southsea and Wimbledon, until 1889.

He was a licentiate member of the Royal Institute of British Architects, and a member of the Quantity Surveyor's Association of London. He had been a member of the Junior Conservative Club, a retired Captain of the Fourth V. B. East Surrey Regiment (now the 23rd London Regiment) and formerly held commissioned rank in the Royal Engineers.

When King Edward VII made his Indian tour (as Prince of Wales) in 1875-6, Captain Wright was selected to accompany the Royal party in a secretarial capacity, and one of his cherished possessions is a silver medallion commemorating that tour, which King Edward himself presented to him.

In 1890 he left England to seek a milder climate and in the following year he brought his family here and made his home in Alameda, where for several years he from time to time assisted the City Trustees and School Board as Advisory Architect in their selection of designs for public schools, library building and the present city hall.

After some years of practice in San Francisco he formed a partnership with Mr. Willis Polk, then later Mr. L. C. Mullgardt became associated with them. Early in 1906 the partnership was dissolved, and at this period came the great fire which brought disaster to the city, also great opportunities to the architect. Having in hand at that time the large W. P. Fuller & Company's glass warehouse, and other work under construction, he immediately invited his friends, Mr. Geo. Rushforth, of Stockton, and Mr. B. J. S. Cahill of San Francisco, to join forces with him in this and prospective work. The firm of Wright, Rushforth & Cahill continued until 1913, since which time it has been Wright & Rushforth. One of the first architects Mr. Wright met in California was Mr. Augustus Laver, the architect of the old city hall, and in the course of conversation they discovered that they had both received their tuition under the same architect, but with twenty years intervening. At Mr. Laver's death several of his most valued colored perspectives became the property of Mr. Wright.

He would often allude to the early days of the San Francisco Chapter, when, with Messrs. Seth Babson, Oliver Everett, Wm. Curlett, G. W. Percy, and others, they aspired to increase the Chapter's usefulness, and although he never sought office he was faithful in attendance and active in its work, and at the time of his demise was a director. He was also a member of the American

Institute of Architects, a past president of the Technical Society of the Pacific Coast, and a member of Gosport Lodge 903, F. & A. M., England.

It may be said in reviewing Mr. Wright's achievements that his specialty was construction rather than designing, and in that he was unsurpassed. His grasp of the contents of plans preparatory to specifying and rendering estimates was most remarkable.

He was the architect of the manufacturing plant of W. P. Fuller & Co., at South San Francisco, and superintended the erection of the Hayward building (now Kohl building). He also participated in the designing and erection of numerous buildings in and around San Francisco, one of the most recent being the Hotel Whitcomb, one of several buildings erected for the Whitcomb Estate.

He was a hard worker, energetic and progressive, ever desirous of elevating the ethical standards of his profession. He was for twenty years or more tireless in his efforts to bring about a betterment of the existing conditions in estimating and contracting. He was the pioneer in this country for the adoption of the "Quantity System" and the author of several publications on the subject, also the book "Wright on Building Arbitrations."

In 1914, touring the eastern states lecturing upon this subject before the General Contractors and Architectural Associations, he did much to awaken the interest of these bodies to the necessity of establishing a standard quantity system, and it is largely through this and his publications on the subject that it is now being used in some municipal and government work in eastern cities

The General Contractors' Association of San Francisco, in recognition of his voluntary endeavors to bring about these results, elected him to be their first "Honorary Member."

Those who knew Mr. Wright intimately recognized his sterling qualities, his genial, kindly nature. He advocated always a "square deal" between owner and contractor, and would never allow himself to be the recipient of any favor which might place him under obligation to the disadvantage of his client.

The last few months of his life were devoted to a philanthropic effort to provide a convalescent home and housing accommodations (for returning invalided soldiers and sailors of British birth, now serving with either the American or British forces), to be called the Victoria Memorial, and for this object he and Mrs. Wright deeded to a Board of Trustees, on January 29th, 1918, about forty acres of beautiful wooded land in Napa Valley, and it was while at the point of perfecting the organization of the governing body that his life was suddenly brought to a close.

GEORGE RUSHFORTH.

* * *

California's Production of "War Minerals"

In many ways California is responding wonderfully to the demand for substances heretofore produced to a small extent, if at all. The Tungsten output for 1915 was valued at $1,005,467, for instance. Steel manufacturers require considerable amounts of this metal in making armor plate, munitions, etc., and the 1916 production for the State increased to $4,571,521. With the 1917 figures not yet compiled, it is well known that a further increase will be recorded. Similarly, the value of chrome in 1916 was $717,244, as compared with $38,044 the previous year. Magnesite jumped from $283,461 to $1,311,893; quicksilver from $1,157,449 to $2,003,425, and manganese from $49,098 to $274,601.

THE BLACKSTONE HOTEL, OMAHA, NEBRASKA

Mid-West Building Activities

By F. W. FITZPATRICK *

IN spite of the rather general slackening of building activities over the country, the farming section of the Middle West seems to be pursuing the even tenor of its building ways. Natural enough, too. The farmer has never been so prosperous, has never had as high prices for his products and such bountiful crops as were those of this last season. Of course, the more prosperous he is the more he buys from the neighboring city, the better he dresses, the finer auto he drives. So that he passes on his prosperity. It may take quite a while for the full benefit of that activity to reach the bigger manufacturing or financial centers, but such cities as Omaha, for instance, (really a great market place for the richest farms in the world) get the direct benefit of farming prosperity. Omaha's building record for 1917 will bear witness to that fact.

One of the most important factors in the building activity of the Omaha district is the Bankers Realty Investment Company, an institution that plans, builds and finances commercial buildings, a building-company.

*EDIT. R'S NOTE.—Readers of The Architect and Engineer know Mr. Fitpatrick by his work and have been deeply interested in his writings in these pages, matter that is progressive, helpful, full of vitality, constructive criticism and interesting novelty. As private practitioner, special architect in the Government service at Washington, and later a consulting architect, he has won signal distinction. In the latter capacity he has been associated with the very best and most important work done in this country, in Canada and in Australia. Mr. Fitzpatrick at present is in charge of the Architectural Department of the Bankers' Realty Investment Company, Omaha, Neb. The accompanying illustrations are examples of some of his recent work.

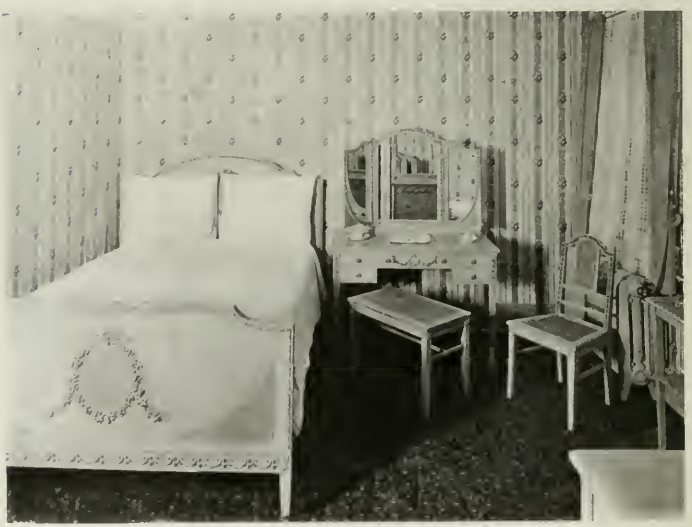
ONE OF THE PARLORS, BLACKSTONE HOTEL, OMAHA

TEA ROOM, BLACKSTONE HOTEL, OMAHA

BALL ROOM, BLACKSTONE HOTEL, OMAHA

ORIENTAL CAFE, BLACKSTONE HOTEL, OMAHA

LOBBY, BLACKSTONE HOTEL, OMAHA



A GUEST ROOM IN THE BLACKSTONE HOTEL, OMAHA

HOTEL, GRAND ISLAND

In the past year it has built its share of banks, clubs and such structures in its immediate territory, Kansas, Nebraska, Iowa and Wyoming, but its principal work has been in conjunction with the North American Hotel Company in building the latter's splendid chain of Mid-West hotels.

No part in the country is more in need of hotels than this Middle-West section. It is rich territory, even the smaller towns support three and four banks, the people spend money readily, but, so far, generally, the hotel "accommodations" have been abominable. This hotel company has seen the need and is supplying the "long-felt want" just as fast as it can build. It has five structures now under roof, three others started, plans for a round dozen more, and there are demands, appeals from a hundred towns

NORTH AMERICAN HOTEL, SIOUX CITY, IOWA

for still more. It standardizes its equipment, operates the hotels as a chain which greatly facilitates and economizes on operation, and is so heavily financed that it can buy materials, foods, etc., in enormous quantities and for cash, consequently at the lowest prices.

With the architectural end of its work in competent hands, its construction, engineering, purchasing and general office details likewise directed by experts, the Bankers Realty Investment Company would seem to be assured so phenomenal a success that it must soon outgrow its present field of activity, the Middle West, for it is equipped to do construction along National lines.

COURT, ST. REGIS APARTMENTS, OMAHA

DESIGN FOR BANK BUILDING, OMAHA

MASONIC TEMPLE, RIVERTON, WYOMING

Concrete Lumber in House Construction

Boards of concrete, with joists, rafters and stair-frames of the same material, are used in the construction of a novel building in Los Angeles, California, the whole being set upon a concrete foundation, says the Scientific American. Though put together after the manner of a frame structure, the building is as fireproof and durable as the more common types of cement houses, but it requires less material and is lighter in weight.

The various parts are poured into forms on the ground near the site, and in that way the danger of breakage is eliminated. The clapboards are poured in sets of ten, the forms being securely clamped together, and the cement allowed to harden in them for several days. Then they are taken out and allowed to cure before being set up. This is done while the preliminary work is going on, such as excavating and laying the foundation.

The joists, rafters and other parts are formed in the same manner, and various types of reinforcing are used for each. The boards are reinforced with mesh like chicken wire, while the timbers have iron rods of varying thickness to strengthen them. These are allowed to project at one end in order to fit into corresponding holes in other timbers, so that the whole framework dovetails. The method of attaching the boards to the 2x4's is with nails, and nail-holes are bored into the cement boards before they have set by running a wire through them. As the cement timbers will not take the nails, a strip of wood about an inch and a half thick is wired to the cement scantling.

MEDICAL BUILDING, BUSH AND HYDE STREETS, SAN FRANCISCO
ALFRED I. COFFEY, ARCHITECT *P. R. WARD, BUILDER*

Medals of Honor Awarded to Architects

Mr. Reginald Johnson of Pasadena has been awarded a medal of honor for the best work in the large residence class, and Messrs. Allison & Allison of Los Angeles, the medal of honor for the best group of buildings erected in Southern California, by the jury of award for the 1918 medals of honor in architecture arranged by the Southern California Chapter of the American Institute of Architects. No award was made in the small residence class. The jury was composed of three San Francisco architects, Mr. Wm. C. Hays, Mr. W. B. Faville and Mr. George W. Kelham.

The Re-education of Disabled Soldiers

MANUFACTURERS are being asked, "Will you employ disabled men, and on what conditions?"

All this may be taken for granted. The question is only one of training the remaining powers of the crippled men to new uses.

Re-education begins the moment the man is wounded. The surgeon must be taught to make the most of the wounded member. He must know the service value of any possible physical salvage.

"Will power" must be re-established. A painter loses his eye. A pianist his hands. The badly maimed lose courage and hope. They have, after previous wars, often insisted on support without effort. There have been instances at Soldiers' Homes where inmates with nothing to do went without fresh vegetables rather than help bring them in.

The Government should continue its military control over the badly wounded until a competent board, consisting of officers, doctors and representatives of industry and labor, pronounce the re-education complete and the soldier ready for new endeavors.

The re-employment of the faculties begins in the hospital bed with games and puzzles which excite interest. It ends with the mastery, so far as may be, of a new and fitting occupation, the release of the soldier from Governmental control and his hearty re-entrance upon a life of productive and successful effort.

The man is injured in the public service. The burden is upon the public and not upon either the future employer or upon the wage earners with whom he will compete. He must get all he earns and no more. Employers and fellow workers will honor and assist him. But the difference between his real earning power and his old income is the amount due him as his insurance, plus such other sums as may betoken appreciation of his sufferings and honor for his devotion.

Re-education is a stupendous task. It primarily is for a great Federal board to undertake and direct even as one board now trains for the army, another provides airplanes and another builds ships.

Marvels have been accomplished. Men without hands are driving nails better than the average carpenter. The blind develop a sixth sense. When the Government has done its best by these men, there will be no question how fellow wage-earners and employers will receive and honor the re-educated producer.

* * *

Architecture No Longer a One-Man Profession

ARCHITECTURE, to meet present-day conditions, must be a highly-organized business and not a one-man profession, as it used to be, says the Contract Record of Montreal. Two circumstances, at least, are directly contributing to this. The first is that modern conditions, especially in the field of industrial endeavor, have made obsolete the small ways of handling big problems. The task of the present-day architect in designing industrial buildings is not comparable to that of many years back. He has to supply the needs of a complicated and intricate organization—an organization that, in most instances, has been developed to a point of high efficiency. This economic situation has required architecture to adjust itself into a highly organized business that it may cope with the problems of its highly-organized clients.

The need of eliminating the one-man idea in the architectural profession is no less essential in almost all lines of building design, let alone the industrial field. Architecture, like engineering, has become a specialized profession—that is to say, it now involves so many divisions and subdivisions that masters of all are rare. There is the creating and designing, the structural part, the mechanical part, the supervision, and the business and administration, and to cope with all of these there is a call for a business organization of specialists, if a large amount of building is to be efficiently controlled.

Another reason for the passing of the one-man idea lies in the competition being met by architects from large building organizations which perform architectural as well as contracting services. These large corporations are gaining ground because they have every facility for financing construction. A Canadian writer regards the intentions of such companies as purely mercenary, and thus opposed to the interests of good design. He says: "It can easily be seen that the building corporation's interest being to sell an article at a profit, they are not going to obtain the best possible solutions of the problem unless it is to their monetary advantage to do so. * * * Undoubtedly, then, if building gets into the hands of business corporations whose sole interest is profit, architectural design will not arrive at the development which it would if controlled by the architect, whose object should be to lead the client to the best solution of the problem in hand."

Whether this is so or not, we cannot get away from the fact that such corporations are competing with architects to the latter's detriment. If the architectural profession is to be maintained on the same basis as heretofore, it means that the profession must be organized. It will have to adjust itself into a business proposition if it is to successfully compete with these new conditions.

*
* *

Cast Iron Water Pipe in Service for Half a Century

THE long life of cast-iron pipe is a matter of general knowledge, but some actual records of its use in water supply lines for railways which have recently been determined should prove of value to those concerned with water service installation. Instances of old installations of cast-iron pipe have recently been investigated on the Illinois Central Railroad, with the result that the life of several of these lines has been traced accurately down to the present time.

The most interesting case is that of a line of 4-in. pipe approximately 10,000 feet long, which was laid at Centralia, Ill., in 1855. In 1867 the pipe line became inadequate for the water consumption, and upon examination it was found to be heavily encrusted. Efforts were made to improve its capacity by cleaning it and relaying part of it with clean-out boxes at 100 feet intervals. Only temporary relief was afforded, and in the following year about 5,000 feet of the line were taken up and relaid with 8-inch pipe, which is still in service after being in the ground for forty-nine years. The 4-inch pipe removed at Centralia was relaid in 1868 or 1869 at Ramsey, Ill., and remained in service until 1903, when it again became too small for the demand, and was replaced by 6-inch pipe. Since that time the old 4-inch pipe has been used as drains at a number of places.

Some of the 8-inch pipe laid at Centralia in 1868 was taken up when the shops were abandoned in 1916. It was found to be in such good con-

dition that most of it was re-used, no distinction being made between the old pipe and new cast-iron pipe. Other examples of long life of cast-iron pipe on the Illinois Central include one of 7,500 feet of 4-inch pipe at the Little Wabash river, which was laid in 1857. This remained in service until July, 1893, when it was replaced by larger pipe. Some of the old pipe was relaid at Centralia in 1894 and 1895, and is still in service. No signs of paint can be found on the pipe at the present time, and apparently it had never been painted. There is also a line of 3-inch pipe, 1,175 feet long, which was laid at Correctionville, Iowa, in 1887, and is still in use, and a line of 4-inch pipe 2,962 feet long, which was laid at Webster City, Iowa, in 1869, a portion of which is still in use. A line of 4-inch pipe 1,740 feet long, laid at Cherokee, Iowa, in 1870, remained in service until 1900, when it was abandoned on account of a change in the water supply arrangements, and a 3-inch line 606 feet long, laid at Gaza, Iowa, in 1888, was abandoned in 1911 on account of the destruction of the water plant by fire.

The tendency of cast-iron pipe, in common with other types, to become more or less encrusted with the lapse of time, has no bearing on the life of the pipe, as it can be cleaned from time to time. In 1913 the Illinois Central experienced difficulty of this nature with an 8-inch line supplying water from the Big Muddy river at Carbondale, Ill. This pipe had become so encrusted that a pressure of 140 pounds per square inch was required at the pump to deliver 400 gallons a minute, which indicated that the capacity of the pipe was reduced to approximately that of a 5-inch pipe. Upon examination it was found that the diameter was reduced to about 7 inches, involving a large increase in the friction factor as a result of increased roughness. A contract was let for cleaning the pipe under a guarantee that it would be restored to 95 per cent of the discharge capacity of new pipe. The encrustations removed were estimated to represent about sixteen tons of material, and the work was done without taking the station out of service for more than a few hours at a time and with no interruption to train service. When the cleaning was completed a test run on the pump gave a discharge of 498 gallons a minute for an average pressure of 70 pounds per square inch.

The early cast-iron pipe is characterized by a bell that differs from the standard designs of the present time, by the presence of two reinforcing rings or enlargements at the third points of the pipe, and by inequality in thickness resulting from the practice of casting the pipe with the mould in a horizontal position. Measurements indicate an average thickness of about $\frac{3}{8}$ inch after sixty-two years of service, as compared with a probable original thickness of shell of 7-16 inch.

* * *

A Ferro-Concrete Ship

IT IS said that when the first iron vessel was constructed on the Clyde thousands of people attended the launching, fully convinced that the "iron ship" would sink like a stone. The idea that iron would float could not be got to penetrate their "wooden" imaginations. But iron triumphed so much as a shipping material that even the classic oak, behind the floating walls of which Briton won her naval and maritime superiority, is no longer used. Prejudice and conservatism, which are by no means unimportant factors in seafaring life, succumbed before utility and practicability. And now experts and shipbuilders are carefully consider-

ing—indeed, in some cases putting into practice—ideas for the building of ships in ferro-concrete, and Dundee in all likelihood will be an important center of this new industry. The possibilities in the constructing of ships in ferro-concrete have long been under the consideration of experts, although no practical attempt was made to put any scheme into execution until comparatively recently. The destruction caused to shipping by the German U-boats directed the attention of the experts of this and other countries in a more acute degree to the building of concrete craft. As a matter of fact, a start has already been made in Norway in the construction of these vessels. A few days ago the first ship built of ferro-concrete was launched at the Porsgrund Cement Works. The ship, according to the accounts received in this country, was built bottom upward, in which position she was launched on a sort of underlying sledge which glided into the water with the ship. When a sufficient depth of water was reached the hull became detached from the sledge and gradually sank up to a certain point, when it slowly righted itself. The ship, which is of 200 tons burden, was built in three weeks, but it is believed that the next vessel will require only about half that time, as the original frame will be used for each subsequent vessel of the same size. It is calculated that a ship of 1,000 tons can be constructed in six weeks. It may be stated that the introduction of ferro-concrete was first proved to be of practical use by Joseph Morrier, a French gardener, about the year 1868.—Dundee Advertiser.

* * *

Will Specify the Fields for Engineering

MEMBERS of the American Association of Engineers have been asked by the qualification committee of the association to send to the committee their definitions of the various classes of engineers. The questions involved are:

What is a consulting engineer?
What is a civil engineer?
What is a mechanical engineer?
What is an electrical engineer?
What is a mining engineer?
What is a chemical engineer?

Each of these classifications is represented among the engineers of the Pacific Coast. Besides there is another classification not contained in the above list, which has numerous representatives, and that is the "structural engineer." There has been a great deal of confusion in the public mind regarding these classifications and a lack of understanding in the professional mind as to their exact scope and nature. For example, a consulting engineer may come under any one or all of the other classifications. A civil engineer may also come under one or several of the other classifications. Again, where does the province of the mining engineer end and the chemical engineer begin? Can a man be a mining engineer without being a chemical engineer?

Necessities of professional work, we believe, will preclude the fixing of exact limitations to any of these classifications. A distinct service will be rendered by the qualification committee, however, if it is able to define the potential professional qualifications which will entitle an engineer to claim any one of these designations. Members of the American Association who have definite views regarding the classification of engineers should communicate them to the association at 29 South La Salle street, Chicago.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
T. C. KIERULFF - - - *Legal Points*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. LII. MARCH, 1918 No. 3.

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WHY HIGH COST OF LABOR DOES NOT WARRANT INCREASED COST OF BUILDING

Twenty-five years ago, when the hod carrier worked ten to eleven hours a day for $1.25, laboriously carrying the hod up ladder after ladder, a fair measure for a day's work was the handling by him of about 1500 to 2000 bricks. Today, with hod carriers working eight hours a day, receiving a minimum wage of $5.00, a quick running construction hoist, to say nothing of the modern mortar-mixing machine which eliminates a large part of the cost and increases the quality of the mortar, is substituted for the unconquerable and painful slowness of the ladder. Thus it comes about that the present-day laborer in eight hours handles ten to twelve thousand bricks for $5.00, plus the cost of operating the hoist, as against the old ten hour a day at $1.25, handling a maximum of 2000 bricks, plus the cost of the ladders and the loss of time. The loss of time is a serious item and is the basic principle of discount and interest.

The same thing applies to the cost of nearly every other economic element in building construction. The concrete-mixing machine, not only with mechanical precision insures a perfect mixture, but does it much more rapidly and at less cost than the old, unreliable and expensive method of mixing concrete by hand.

The pneumatic drill or hammer drives rivets with accuracy and safety at one-tenth the cost of the former slow, cumbersome, unsafe and expensive method of the hand driving of rivets or bolting together the different structural members of a steel frame that have to be assembled in the field. The pneumatic drill and other mechanical tools cut, carve and fashion three to four times more in cubic feet of stone work than was formerly accomplished by hand with artisans receiving less wages and

working longer hours. The sandpapering machine, the floor polisher, the portable sawmill and hundreds of other devices used in building are all tributary not only to rapidity in construction, but to economy in cost. This more than equalizes the higher wages and shorter hours of labor now prevailing.

Therefore, if under old methods a building such as the Mills building in San Francisco, or any other modern office building, cost at that time as much or more than identical buildings would cost today, would it not be safe to assume that such buildings in the future, with even higher wages and shorter hours, owing to still further improvements in methods, will not cost more? One safe and reliable prophecy is that present-day costs will never be less.

Of course, labor-saving devices disturb the economic world, the purchasing power of the dollar is ever changing, but business acumen is always rewarded when it recognizes and meets the conditions of the moment.

WILLIS POLK.

MAKING IDLE PROPERTY RENTABLE

What it is possible to do at the expense of a small outlay in making idle and unremunerative property pay is shown by certain recent efforts in that direction in Sixth avenue, New York City. Arthur S. Pendleton, of the National Terra Cotta Society, discussing these improvements, remarks:

"With the announcement of the leasing of the remaining large department store on Sixth avenue so long vacant, attention has been attracted to the problem of the future development of this thoroughfare, situated as it is between two of the most important buiness streets of the city, traversed at frequent intersections by an immense shopping public. It theoretically is a profitable situation of leasehold and trade, but through lack of foresight in keeping abreast of the times, buildings have been permitted to fall into various stages of unsightly occupancy and architectural decay hardly believable. One has only to see this general dilapidated condition to realize that to a large extent buildings are not providing incomes for owners, returning little if anything over carrying charges.

"It would seem as though this deplorable condition was in many instances due to a lack of knowledge of the value of respectable appearances and how little it would cost at present price levels to bring about an improvement which will not only turn these losses into income producing investments, but will, in many instances, pay the cost of alteration in the first year or two. The disinclination of owners to attempt anything that would suspend existing business does not hold here, for these remodeled fronts can be, in most instances, constructed with little, if any, interference at all to a continuation of trade."

A striking example of what can be accomplished along the lines of remodeled fronts is cited by the Record and Guide, being a property, vacant for two years and carried at an annual loss of over $1700 and made, through an investment of a little more than $3000 for an architectural terra cotta front of pleasing design, to rent for a period of twenty-one years at an annual income of from $5000 for the first year up to $10,000 with an option of renewal for a like period at a five per cent increase.

Such improvements can be made, due to the small amount of money involved, without the assistance of loaning institutions, without embarrassing the Government in the least, without a consideration of high prices, for they may be accomplished by masonry construction and the use of architectural terra cotta, brick or stucco, in which prices have remained nearly normal with deliveries prompt.

Thousands of properties throughout the Pacific Coast could be made to yield an excellent return under a program of renovation and intelligent management. It is a fact that several local real estate firms specializing in this order of activity have made big returns, although their operations have done little more than scratch the surface of the field for this order of enterprise.

Montana Architects

O. F. Wasmansdorff of Lewistown was elected president of the Montana Association of Architects, and Frank Bossont of Havre secretary-treasurer at the closing business session of the annual convention held on January 19 at Billings. The convention closed with a banquet at which a score of local business men attended as guests. A committee was appointed to draft resolutions of condolence for H. H. Johnson of Great Falls and R. Nickels of Butte, who died since last meeting. G. McAllister of Billings, G. O. Pruett of Miles City and Floyd Hammill of Butte were elected to membership in the association. There was a general discussion of the new State law requiring a license to practice. Several cases wherein the law is being violated were brought to light. C. C. Cohagen and G. McAllister, both of Billings, were appointed a committee to design a new form for certificates of membership in the association. By-laws are to be revised by a committee composed of C. C. Oehme, J. G. Link and C. C. Cohagen. Talks were made by C. C. Cohagen on "The Influence of the Modern Architectural College upon Our Profession," and by Otto F. Wasmansdorff on "The Value of Architectural Engineering in Our Work."

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Coming Numbers

The coming April issue of the Architect and Engineer promises to be of exceptional interest in that it will be devoted almost exclusively to the recent work of Mr. Myron Hunt, a leading member of the architectural profession on the Pacific Coast, and formerly senior member of the firm of Myron Hunt and Elmer Grey of Los Angeles.

In May a City Planning Number, illustrating the work of Mr. Charles Henry Cheney, will be published, and a feature of this issue will be articles by Mr. Charles E. Hewes, city manager of Alameda; Mr. Frank D. Stringham, president of the City Planning Commission of Berkeley, and Mr. Miles O. Humphreys of the Fresno City Planning Commission; also an article on "Housing Problems in War Times" by Mr. Cheney. More than forty half tone plates of city planning studies will be shown in this issue.

Plans Turned Over to Contractor

Mr. Frederick H. Meyer has completed the plans and specifications for alterations to the Hotaling building on the north side of Market street near Larkin, San Francisco, and they have been turned over to the Lindgren Company, who will be in charge of construction. The building is to be entirely renovated and the offices rearranged into 65 rooms for hotel purposes. The front of the building will be plastered.

Nevada Bank and Lodge Building

Mr. Walter O. Lewis, Gazette building, Reno, Nevada, is preparing plans for a lodge and bank building to be erected at Yerington, Lyon county, Nevada, for the Odd Fellows of that city. The ground floor is to be leased by the Yerington Bank. Building will be two stories and will cost $25,000.

Santa Barbara Warehouse

Messrs. Kremple & Erkes, 415 Henne building, Los Angeles, are preparing preliminary sketches for a storage warehouse to be erected at Santa Barbara for the Channell Commercial Company, wholesale grocers.

Personal

Mr. John T. Vawter, architect and engineer, formerly of Los Angeles, who received a commission as captain in the engineering corps some time ago, is now associated with the Federal Shipping Board in experimental work in the construction of concrete ships. During the last two years Mr. Vawter developed a system of construction for concrete ships which he patented.

Messrs. Mead & Requa of San Diego, whose work is shown in this issue of the Architect & Engineer, have been appointed supervising architects for the army aviation buildings at Rockwell flying field on North Island, San Diego. Mr. Albert Kahn of Detroit prepared the plans. The buildings will be Mission design, and will be constructed of concrete, hollow tile and wood.

Mr. H. H. Gutterson of San Francisco, who has been in charge of the architectural work of the Mason-Duffey Company for a number of years, has taken up army and navy camp welfare work. During his absence from the office at 278 Post street the duties of supervising architect will be attended to by Miss Gertrude E. Comfort.

Mr. Robert M. Taylor, who has had an office in the Marsh-Strong building, Los Angeles, has gone to Columbus, Ohio, for training as adjutant in the aviation section, signal officers reserve corps, at the government school of aeronautics, Ohio State University.

Mr. Lloyd A. Rally, formerly in the office of Mr. John Galen Howard, has opened an office for the practice of architecture at 604 Mission street, San Francisco. Mr. Rally is preparing plans for two residences to be built across the bay.

Mr. W. V. Raiguel, formerly head draftsman for Mr. John Galen Howard, is in the adjutant's office at the State University Training School, Columbus, Ohio.

Mr. Milton Lichtenstein, a well-known San Francisco architect, with offices at 111 Ellis street, has changed his name to Milton Latham.

Mr. Chas. W. McCall, Oakland architect, recently underwent an operation for appendicitis.

New Buildings for State University

President Wheeler of the University of California, in his annual report to the Governor, recommends the following permanent improvements at the University:

Gymnasium building.

Building for housing the college publications, campus eating places and the Associated Students' Store.

Reinforced concrete stadium.

Armory.

Auditorium to seat 5000 students.

Funds for the stadium will be available from a bequest of the late E. B. Cowell. Mr. John G. Howard, 604 Mission street, San Francisco, is the university architect.

President Wheeler also recommends the immediate construction of a nurses' home on Parnassus avenue, San Francisco, and the plans for this building will be made by Mr. Lewis P. Hobart, Crocker building, San Francisco.

Much Government Work

Advices from Washington are to the effect that the government is planning considerable new construction work on the Pacific Coast. There is to be a training and flying station for student aviators at Mills Station, near Sacramento, in addition to the one authorized at Riverside and for which a contract has been let to Twohy Bros. for $1,200,000. There will be a total of fifty-two buildings erected. Other work promised is an immense hospital, which will probably be built in the vicinity of Fort Mason, and the expenditure of large sums for housing in Oakland and Alameda, the latter work to consist of building workmen's cottages for the employees of shipbuilding plants.

Apartments and Garage

Among the San Francisco architects who have found plenty to keep them busy in these war times is Mr. J. C. Hladick, Monadnock building, who recently awarded a contract for the construction of a four-story reinforced concrete apartment house for Dr. Leonard Stocking of the State hospital at Agnew, and who is preparing plans for a three-story frame apartment house to be erected on Filbert street, west of Steiner, San Francisco, and a one-story brick garage on Union street, west of Steiner, the owners in each case being Mrs. Anna Hladick and Mr. Otto Carson.

Another Big Ship Order

A contract for ten ships, costing approximately $19,000,000, has been awarded the Schaw-Batcher Company of San Francisco by the Emergency Fleet Corporation. Each will be of 8800 tons. The company's first contract was for eight ships, the first of which will be launched in thirty days.

For Uncle Sam

Mr. Wilbur David Cook, Jr., Fellow of the American Society of Landscape Architects, Marsh-Strong building, Los Angeles, was recently called to Washington on cantonment work for the government. Although busy at home, Mr. Cook dropped everything and hurried to the capital, where his services were urgently needed.

Mr. H. J. Brunnier, the San Francisco structural engineer, was also called to Washington the past month on matters said to be connected with government construction work.

Golden Gate Park Aquarium

The Probate Court has ordered the real estate holdings of the late Ignatz Steinhart sold within the next six months, and a portion of the money thus obtained is to be used in the construction of an aquarium at Golden Gate Park, in accordance with Mr. Steinhart's bequest.

Turlock School Plans

Messrs. Stone & Wright, San Joaquin Bank building, Stockton, are rushing to completion working drawings for the new Turlock high school. The building will be one story, frame and brick veneer, and will cost $60,000. The same architects have completed plans for an addition to the Concord school.

Elko, Nev., County Buildings

Plans have been completed by Mr. Walter H. Parker, architect in the Hearst building, San Francisco, for a county infirmary and poor farm at Elko, Elko county, Nevada. There will be two buildings designed in the Colonial type, constructed of brick and estimated to cost $90,000.

$25,000 Parochial School

Mr. Leo J. Devlin is preparing plans for a two-story frame and brick veneer parochial school building for St. Agnes parish, Rev. J. A. Butler, pastor. The school will occupy a lot 100 x 186 feet on Ashbury street, San Francisco, and will probably cost $25,000.

Emeryville School

Plans are being drawn by Mr. Frederick Soderburg, a member of the Oakland City Council, for a two-story brick school house for the town of Emeryville. There will be nine class rooms and an auditorium. The building and equipment will cost $60,000, for which bonds have been voted.

To Vote School Bonds

The Hughson Union High School District will shortly vote bonds amounting to $55,000 for a new high school building.

More Concrete Ships

Concrete ships, spoken of recently as a possibility, have now been adopted by the United States Shipping Board. Contracts for ten 3500-ton concrete boats have just been awarded to the Ferro Concrete Shipbuilding corporation at Redondo Beach, California. The first vessel is to be delivered within six months and the other nine within a year. The concrete ship of 7900 tons displacement being built near Redwood City by the San Francisco Shipbuilding Company was successfully launched a few days ago.

Mr. Henry Shermund Busy

Plans have recently been completed by Mr. Henry Shermund, Mills building, San Francisco, for an attractive bungalow at Menlo Park, San Mateo county, for Mrs. A. W. Ahlert. Mr. Shermund has also made plans for a one-story reinforced concrete commercial garage,50x 120, to be erected on Ocean avenue, west of Miramar avenue, San Francisco, for Mr. R. L. Carter. Mr. Shermund has other work under way or in prospect and says he has no reason to complain of present business conditions.

"Somewhere in France"

Mr. Walter D. Reed, former architect of the Oakland Park Board, is now a captain, and on General Pershing's staff in France, as the following letter to Mr. Lee Kerfoot, park superintendent, would seem to indicate:

"I am now used to the noise and can sleep through a bombardment. Nothing in the way of noise will ever again bother me. I think I could sleep if a cannon exploded under my window. Being on the general staff has its drawbacks. An aide has to change his uniform oftener than he eats."

Concrete Motor Factory

Mr. Edward T. Foulkes, Crocker building, San Francisco, has prepared plans for a one-story reinforced concrete factory building for the Hall-Scott Motor Works of West Berkeley. This concern is engaged in filling a big order for aeroplane motors for the United States Government.

Portland School Building.

The J. M. Dougan Co., formerly of San Francisco, and now of Portland, are the low bidders for the construction of the Hawthorne-Buckman school building, Portland, from plans by Mr. F. A. Naramore of that city. The contract will exceed $200,000.

Bank Building

A two-story bank building is being planned for the Bank of Palo Alto by Messrs. Bakewell & Brown, architects of San Francisco. A structure costing $60,000 to $70,000 is proposed.

Oakland Architect Busy.

Mr. Clay N. Burrell, Oakland architect, has completed plans for the second unit of the manufacturing plant being constructed at East Sixteenth street and Twelfth avenue, Oakland, for the Hammer-Bray Company. There will be a freight and storage building, 350 x 140 feet, and an administration and office building, 100 x 60 feet.

Mr. Burrell has also made plans for a two-story apartment house to be erected on College avenue for the Ritson estate; five apartments and physician's residence for the owner on Lake Shore avenue; alterations of a store and flat building on Broadway into modern apartments, and a $40,000 three-story frame and plaster apartment house on Grand avenue to contain fifteen apartments of four and five rooms each.

Mr. McAdoo Explains

In a letter to the San Francisco Building Trades Council, Secretary of the Treasury McAdoo explains his recent request for curtailment of building. He said it was intended to discourage extravagance and to devote all available capital to war work. Public buildings and those necessary to growing cities are not to be considered as affected by the request, he said.

Los Angeles Chapter, A. I. A.

Mr. Floyd E. Brewster, formerly of New York, had been assigned to membership in the Los Angeles Chapter, A. I. A. Mr. Brewster is now located at Riverside. The regular meeting night of the chapter has been changed to the second Tuesday evening of each month.

$20,000 Mausoleum

Messrs. Cunningham & Politeo, First National Bank Building, San Francisco, have prepared plans for a private mausoleum for Mr. Robert Dollar. It will be built of granite and marble in Mt. Tamalpais cemetery, Marin county.

New Shoe Store, Flood Building

A lease has been signed for two stores in the Flood building, one with a Market street entrance and the other on Powell street, by Mr. Frank Werner, president of the Walk-Over Shoe Co. Elaborate fixtures will be installed from plans by C. E. Gottschalk, architect.

State Building Controversy

The controversy over the State building plans will be referred to the National Commission of Fine Arts at Washington, D. C.

$30,000 Country Home

Mr. C. W. Dickey is preparing plans for a country home in the Spanish type in the Saratoga foothills, Santa Clara county, to cost $30,000.

Big After-the-War Demand for Building Materials

THE Dow Daily Building Service of New York city takes a very optimistic view of after-the-war building conditions. The rebuilding of the devastated regions of France and Belgium and new construction in England will cause a great demand for building materials which must be largely supplied from America. The report states that a large part of the work will be done by organizations in this country. France is negotiating already for more than $150,000,000 outlays in the reconstruction of its devastated cities. Orders from both France and England are pouring into the National Lumber Manufacturers' Association, which reports that in one English city—Birmingham—50,000 houses of the frame type ought to be replaced at the earliest possible moment, the community needing from 10,000 to 20,000 more houses at once. The proposed rate of construction is to be 5000 houses a year, the entire program calling for nearly 2,000,000,000 feet of American timber. The town council is preparing to handle operations which will involve $6,250,000 annually. French negotiations are under the supervision of Noble Foster Hoggson.

"The end of the war will find at least two years of hold back construction pressing for immediate execution in all parts of the world. This alone will tend to hold prices at the high level now being established, which, however, with recent reductions by federal direction, is not half as high as it was a few months ago, although nearly 50 per cent above the years just before the war.

"Investigations show practically half of increased cost is due to labor. This is proving a stimulant instead of a deterrent, especially in home building operations, because higher wages for practically all classes of workers, with full time or overtime employment everywhere, are swelling their savings so that they are well able to pay higher rentals and also to buy or build their own homes. This in turn is laying the foundation for rising real estate values.

"The extent of the situation is illustrated by facts which prove that more than half of the huge outlays for which the government is raising over $20,000,000,000 in a year through Liberty Bond issues will go to labor in this country, even the $5,000,000,000 or more of it which is to be loaned to the European Allies, because it will remain here to be paid for American supplies. It will flow back into the banks and remain in liquid form until the end of the war shall make it available for long time loans. And real estate is always the first form of investment to gain by such an abundance of loanable credits.

"President Elliott Smith of the Building Materials exchange, who is directing committees of the general conference of building interests, said the inflation attending world war conditions probably would last from 5 to 15 years after the end of the struggle. He has statistics showing that prices after the Civil war did not all go back to normal until 1877—and that was a small affair compared with the tremendous bond issues and inflation of the world conflict.

"His committees are reporting that labor will be the last to recede from high price levels—in many lines, it will never allow wages to drop back through all of their war advances. This maintenance of higher wages will be the strongest factor in holding up real estate values, which are dependent on rents, say the experts; and the tendency of the higher rentals to hold will justify builders in carrying on all operations needed to supply increasing population and business in spite of the higher costs of such construction."

Building of Terra Cotta

Editor The Architect and Engineer of California.—The Fifth Avenue Association of New York has awarded its 1917 gold medal to the Postal Life building, at Forty-third street and Fifth avenue, as this year's best example of new construction in the Fifth avenue district. The building thus honored is faced almost entirely with terra cotta. It is a fact of interest to architects that many of the most distinctive new designs in the Fifth avenue district have been executed in this artistic building material.

In the Winfield building, now under construction for Mr. Frank Woolworth at Fifth avenue and Fortieth street, there is an opportunity to observe the structural efficiency of terra cotta as well as its artistic beauty. The new Tiffany studio at 13 West Fifty-seventh street, is another dignified design of exquisite beauty.

Very truly yours,
GLADDING, McBEAN & CO.
Atholl McBean, Secretary.

Biography of Mr. D. H. Burnham

Mr. Willis Polk has been invited to write his reminiscences of the late Mr. Daniel H. Burnham, noted Chicago architect, with whom Mr. Polk was at one time associated. An extended biography of Mr. Burnham is being prepared by Eastern publishers.

Electrical Department

Gas Flood Lighting

By C. B. BABCOCK

GAS flood lighting has become generally accepted by the public as a distinct invention by electric interests, when, as a matter of fact, flood lighting on a smaller scale was first practiced to the best of the writer's knowledge shortly after the gas arc lamp was first placed on the market.

With the advent of the upright type of outdoor gas arc lamp, there was a demand for window lighting from outside sources, and the General Gas Light Company conceived the idea of the use of a parabolic reflector, and with this equipment the gas lamp projected its light into the window, flooding the interior with light and also doing some service as an outdoor lighting advertisement.

When the inverted gas arc lamp was first placed on the market, the parabolic reflector was constructed to be used in conjunction with this lamp for certain installations, and has continually enjoyed considerable popularity.

The world at large first realized the wonderful value of flood lighting and beautiful effects to be obtained, when Mr. DeArcy Ryan, illuminating engineer in charge of lighting effects at the Exposition, first adopted this system of lighting on a large scale, and which proved so successful in bringing out the wealth of detail and artistic beauty of the magnificent buildings on the Exposition grounds.

Shortly after the close of the Exposition, the Pacific Gas and Electric Co. constructed a new sub-station on Balboa street, in San Francisco, and there installed concrete posts equipped with electric units and carrying out the flood lighting idea.

A few months ago the writer was asked by the engineer of the Portland Gas and Coke Company, Mr. E. L. Hall, if it would be practical to utilize gas for flood lighting purposes at their new compressor station, and was informed that it was not only practical, but such an installation could be made and would make a most attractive and satisfactory lighting effect.

With slight improvements, the concrete electric flood lighting posts used by the Pacific Gas and Electric Company in San Francisco have been adapted to the use of gas, and I am indebted to Mr. E. L. Hall for the engineering and laboratory data which follows.

The purpose of a flood lighting installation was in connection with our new compressing station. It has also opened a new channel by which gas may be advantageously used for ornamental outside flood lighting.

The general design of the post did not originate with this company, in that it was previously used in connection with an electric lighting system in San Francisco. However, in order to adapt this post for the use of gas, it was necessary to enlarge the head and make other minor alterations.

The primary feature considered in selecting the proper lamp for the posts was to obtain the greatest quantity of light on the face of the building and at the same time procure an even illumination, without shadows.

The general construction of the post head suggested the use of an upright burner and several standard types of these were tried out in addition to a special burner which was made up in the laboratory. Relative tests were made between these and inverted lamps and after due consideration a No. 50 Humphrey outside arc was selected.

It was decided to use an opal globe and a clear shade with this arc, which, according to the attached photometric curves, gives the most even distribution of light under the prevailing conditions.

In order to utilize all of the available light, it was necessary to install a reflector on the inside of the post head, which at the same time would protect the head from the heat of the lamp.

A mirror reflector was first contemplated, but inasmuch as this incurred considerable unnecessary expense and, as it was thought this type would deteriorate in a short time, it was decided to use sheet metal. The reflectors in use were made of No. 26 gauge galvanized iron and are enameled with white "Vitrolite," which was baked on by a local concern.

The face of the building is forty-two feet in length and twenty feet in height and it was decided, chiefly for the sake

CONCRETE ELECTRIC FLOOD LIGHTING POST

of appearance, that the height to the center of the light should be twelve feet.

From the enameled surface of the spherical reflector it was determined that a diffused reflector would be obtained, and the general effect would be similar to the reflection from a flat diffused surface, only the light would be tangent to the surface, and thus have a more thorough distribution. The form of distribution of the light was not very different from that of the lamp itself, especially since practically one-half of the light was reflected. Further tests with various reflectors showed that the angle between a horizontal line through the light and the top of the building must not be more than 30 degrees, which results in placing the posts approximately 15 feet from the building.

The spacing of the posts along the front of the building was worked out

DAY VIEW, STATION E, PORTLAND GAS & COKE COMPANY, PORTLAND, OREGON

NIGHT VIEW, STATION E, PORTLAND GAS & COKE COMPANY, PORTLAND, OREGON

with a view of getting as near as possible an even distribution of the light and is illustrated in the photographic plates.

The posts and post heads are constructed of reinforced concrete. The concrete consists of one part white Medusa cement and two parts white shell rock beach sand. The reinforcing is of steel channel iron and heavy iron wire and also a two-inch diameter wrought iron pipe, which extends from the bottom of the foundation to the head.

In constructing, the outer shell of the posts was cast at the moulder's works, and at erection the 2-inch pipe was first raised, then as each section of the columns was placed, the space between the section and the pipe was filled with plain concrete.

The 2-inch pipe was not only installed to reinforce the post, but also act as a drain for the head and the lower basin and also to receive a ¾-inch diameter pipe, which supplies gas for the lamps.

The lamp posts were constructed at a cost of $200; the reflectors at $28, and the foundations and other erecting expense was $50, making a total of $278, or a unit cost of $139.

This is the first time in the history of the gas industry that an installation on a large scale of gas flood lighting has ever been attempted, and surely opens up a wide field for this kind of lighting.

No New Schools for Oakland

Mayor Davie of Oakland has announced that the War Department has advised him not to encourage at the present time the proposed bond election for building new schools, and Mr. Davie has made a statement that in all probability no new buildings will be put up by the city this year. It is planned to use the auditorium to relieve congestion in two of the school buildings in that neighborhood and in other districts there will be extra sessions each day.

Public Building Is Active

There has been very little let-up in public building construction work, which is gratifying and in line with the Government's desire to have construction proceed where the general good of the public is concerned. For example, State and county buildings, schools, etc.

At Elko, Nevada, a $90,000 hospital is to be erected from plans by Mr. Walter Parker. Emeryville has voted $60,000 for a new school building, the city of Oakland is in favor of proceeding at once with the erection of badly-needed school houses; the San Francisco board of works has authorized the preparation of plans by Mr. John Reed, Jr., for four large school buildings to fill immediate needs of the school department; Mr. E. C. Hemmings of Sacramento has completed plans for a $40,000 high school at Rio Vista; Mr. W. H. Weeks has plans finished for new school buildings at Biggs, Hamilton and other interior towns. The State will rush work on the new agricultural pavilion which is to be built in Sacramento and for which about $250,000 is available.

Late Architect Donates Land for Victoria Memorial.

There was recently held at the Palace Hotel, San Francisco, a well-attended public meeting of persons of British birth and others interested in a new movement known as the "Victoria Memorial."

Its objects are, first of all, to assist in providing housing accommodations for eligible dependents of and also for invalid soldiers and sailors of British birth or descent, who, being residents of California, serve at the war fronts with the American or British forces on land or sea.

After the war, the Victoria Memorial will be continued in perpetuity as a home of rest, for eligible aged women and men who may no longer be able to successfully compete in life's struggle. Some sanitarium features will be added, to accommodate other persons from hospitals as well as from their own sick rooms.

The Victoria Memorial in California has been under consideration for twenty years or more, but it was not until recently that a site in the beautiful Napa Valley was selected as its future possible home. Some forty acres of beautiful wooded land near St. Helena has been donated as a first installment towards the memorial by the late G. Alexander Wright, a San Francisco architect and a former British officer.

The first official step towards organizing the memorial was taken at the Palace Hotel meeting, when a deed was executed transferring the donated property to a board of five trustees, comprising Messrs. Bruce Heathcote, manager of the Canadian Bank of Commerce; John A. Bishop, manager of Johnson & Higgins Marine Insurance Department; James Otis, of the well-known firm of Otis, McAllister & Co.; Wm. E. Hague, treasurer and secretary of the One Hundred Per Cent Club, and Mr. Wright. The British Consul General, Mr. A. Carnegie Ross, C. B., is honorary president of the Victoria Memorial.

Heating and Ventilating

Oil Burning for Conservation of Fuel

By A. H. BALLARD*

BECAUSE of its simplicity in handling convenience, efficiency, in addition to the shortage of other fuels, a very large demand has been created for fuel oil.

Inasmuch as a great deal of time and money have been wasted on inferior contrivances for burning fuel oil, a description of a very successful fuel oil burner should be appreciated at this time.

Simplicity is the most essential requirement of an oil burner which, for all practical applications, should require no adjustments after installation and should operate over very long periods of time without attention.

The burning of oil carries a very low fire hazard when a successful burner is used and properly installed. Complicated machinery, driving pumps, air blowers, gear boxes, form a complex problem with high initial cost and heavy expense for upkeep to the average user; therefore the necessity for a simplified burner.

Steam and air atomization, while successful, is not altogether satisfactory for a number of reasons, chiefly among which is the waste of oil. With the air atomization it takes too much complicated machinery to get the results, while with steam it is only feasible in high pressure work and steam is not available for all purposes. Therefore the need of a mechanical atomizing burner with high efficiency, low upkeep and low first cost, was very urgent.

To burn fuel oil it must be perfectly atomized and at the same time sufficient air should be introduced to get perfect combustion.

Mr. W. R. Ray of San Francisco devised the method of atomizing oil in an open cup, lying horizontally, driven at 3450 revolutions per minute and then forcing sufficient air at high velocity around the cup and in a direction away from the cup. In this method he not only introduces sufficient air for proper combustion, but also enough to direct the fire in the fire box. Naturally the air leaving the blower would be turning in the same direction as the automizer, causing the fire to be unsteady and having a tendency to throw oil on all sides of the fire box; this the inventor overcomes by inserting guide vanes in a nozzle surrounding the atomizer, which directs the air from a revolving motion to a straight path.

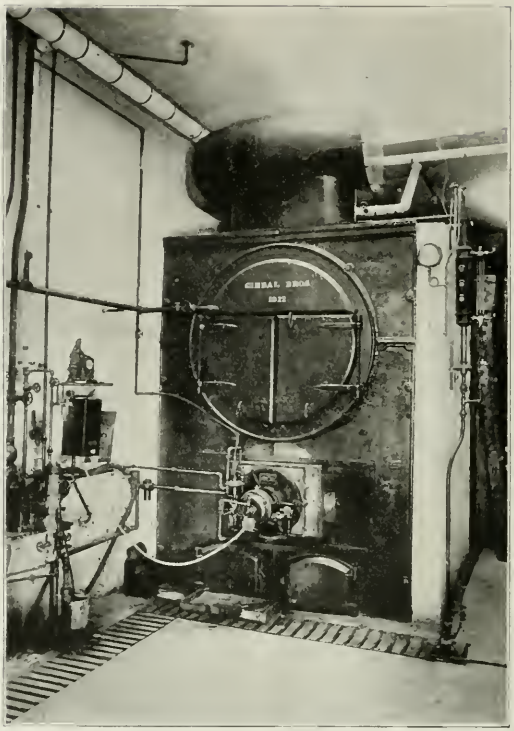
The combustion of the oil is found to be perfect with this method, and it only remains for the inventor to simplify a machine that would accomplish the above results with as little complications as possible. Hence the 1917 Ray Oil Burner was developed.

So necessary is the oil burner to the institution in which it is used, whether it be factory, power plant, school house, church, apartment house, residence, or wherever it may be installed, that no excuse will be accepted for its being out of commission at any time. Therefore it must be constructed of the best material, and all parts must be easily interchanged and to be of standards known throughout the world.

The Ray Burner has standardized with a Westinghouse totally closed motor, which has no running contacts of any character on the starting or running winding. The hollow shaft of this motor has been extended to permit the worm gear to be fastened to the center and the blower and the atomizer at the opposite end of the motor. This permits the centering of the bearing on the shaft. A Hess-Bright ball-bearing is used at each side of the worm gear. This worm gear is encased in a housing which is constructed with an oil well at the base. This gives the two bearings a splash feed which is positive and removes the danger of under or over oiling. This is the only type of machine built driven by totally enclosed electric motor that has but one bearing member and but one place to oil, and this is a splash oil system. It is the only burner which uses the oil for cooling the motor, at the same time heating the oil.

The totally enclosed motor jacket is specially cast with a hollow frame so as to completely encase the motor and allow the fuel oil to constantly pass around the motor. This lengthens the life of the motor by keeping it cool at all times, and at the same time warms the oil some-

* Sales manager W. S. Ray Manufacturing Co.

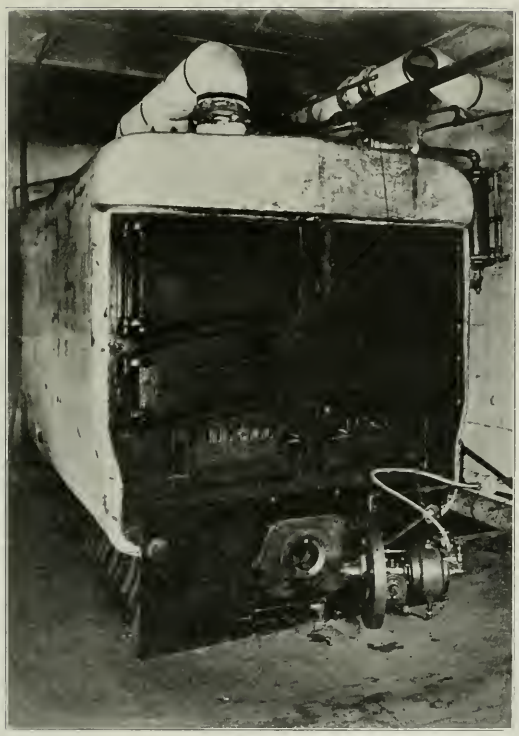


NO. 4 RAY OIL BURNER, INSTALLED IN 60-H.P. BOILER AT GIMBALL CANDY FACTORY, SAN FRANCISCO

what before it is introduced for combustion. This also permits the use of the burner in a boiler room with a temperature so high that an ordinary open motor would overheat and burn out. The simplicity of the construction is shown by the ability to change winding on the burner in ten minutes' time by any mechanic.

With the exception of domestic stoves, fuel oil as low as 14 gravity can be burned successfully without smoke, soot or dirt in all types of fire boxes where high heat is needed. A saving of approximately one-half over coal with coal at $8 per ton and fuel oil at $1.50 per barrel of 42 gallons, on the basis that coal has 14,000 B. T. U. per pound as against oil with 18,500 B. T. U. per pound, and assuming that the coal is perfectly fired, usually 25 per cent of the B. T. U. are not obtained from the coal, owing to the imperfect firing, which causes imperfect combustion.

In addition to the above, the cost of firing coal is an additional item, as additional attendants have to be constantly on the job for four hours per day, whereas with an oil burner one man can supervise any number of oil burners. This, in some instances, makes a tremendous additional difference in the cost of operation, if the customer uses oil instead of coal.



NO. 3 RAY OIL BURNER, INSTALLED IN 48-INCH, 10-SECTION IDEAL BOILER AT JEWEL THEATRE, SAN FRANCISCO

Plans for State Buildings

State Architect George B. McDougall reports plans for the following state building projects under way in his office at Sacramento:

Pathological laboratory and two patients' cottages at Napa State Hospital, Napa. Frame construction, to be erected by contract. Estimated cost, $87,000.

Laundry and bakery buildings at Sonoma State Home, Eldridge. Brick and frame construction, to be erected by contract. Estimated cost, $30,000.

Cottage for inmates at Sonoma State Home, Eldridge. Frame construction, to be erected by day labor. Estimated cost, $15,000.

Main building at Humboldt State Normal School, Arcata. Concrete and frame construction, to be erected by contract. Estimated cost, $200,000.

Assembly hall at San Jose State Normal School, San Jose. Reinforced concrete construction, to be erected by contract. Estimated cost, $75,000.

Mr. Meyerfeld Plans New Building

Mr. Morris Meyerfeld, Jr., president of the Orpheum Circuit, has just purchased property on the northerly line of Geary street, between Grant avenue and Stockton street, 22x120, which, with property already owned by him on the same street, gives him a frontage of 45x120. Upon the expiration of the present leases, the three-story building now on the property will be razed and replaced with a substantial building for retail purposes. Mr. G. A. Lansburgh, Gunst building, San Francisco, is Mr. Meyerfeld's architect.

Gypsum and Hard-Wall Plaster Facts*

By VIRGIL G. MARANI, Consulting Engineer, M. Am. Soc. C. E.

THE use of gypsum for constructive and decorative purposes dates back many centuries, and there is ample evidence of the generous use of this material some 4000 years ago during the Egyptian period.

Specimens of ancient Egyptian, Roman and Grecian architecture illustrate the lasting qualities of gypsum for many purposes of interior construction, and in some cases mosaic and colored designs in combination with gypsum and upon gypsum surfaces are, after some thousands of years, beautiful to the lover of the art covering these periods.

The modern use of gypsum products extends to every civilized country, the German Gypsum Society being responsible for the most scientific research work involving the correct and proper use of gypsum products for many purposes.

Increasing tendency toward the conservation of materials in building construction, together with the most recently revised building laws which require better and more fire-resisting types of construction, have had an important share in the development of the gypsum industry of the United States.

During 1916 there was mined in this country about three million tons of gypsum rock (the greater part of this being converted into fire-resisting plaster and building units), mostly obtained from the important and practically inexhaustive supplies found in the states of New York, Ohio, Michigan, Virginia, Iowa, Kansas, Oklahoma and Texas. Gypsum of excellent quality is also mined in Nova Scotia and supplies an important market in the East.

Gypsum rock, as mined, is a hydrous calcium sulphate; that is, a calcium sulphate (expressed chemically $CaSO_4$), in chemical combination with water of crystallization (expressed chemically $2H_2O$). Interpreted this means that gypsum rock when pure consists by weight of about 79.1 per cent of calcium sulphate and about 20.9 per cent of water of crystallization.

Gypsum rock must not be confused with gypsite, or commonly called "gypsum earth," which is found as a surface deposit, is soft and can be dug by manual labor or by the use of plow and scraper. This material is low in calcium sulphate, which is present to the extent of from 40 per cent to 65 per cent, and also contains impurities, principally clay, which detract from the use of this deposit for the manufacture of fire-resisting materials.

Gypsum occurs in well-defined beds of rock formation covering large areas and often about forty feet thick. It is quarried or mined in its natural state and is passed through crushers which reduce the mined material to a size suitable for grinding. It is then conveyed to dryers which are large inclined rotating cylindrical tubes through which is forced hot air at a temperature of about 100 degrees Fahr. The crushed rock is fed into the high end of these cylinders which, being inclined and revolving, cause the crushed rock to move by gravity at any given rate so that when discharged at the low end, all superficial moisture in the rock is driven off, and the dry, crushed material is in condition to be ground to a powder, this being done in suitable grinding mills, the powdered product being known as ground gypsum.

The ground gypsum is next fed into the calciners. These machines heat the powdered or ground gypsum to a point at which it gives off its water of crystallization. Calciners are large cylindrical tanks, of a size suited to the capacity desired, set on end in brick settings, this end being provided with a concave bottom, the top end being open to receive the material. Coal is burned under the bottom, the heat being conducted up and around the cylinder shell and back through a number of tubes connecting to the stack. The material is fed into the calciners gradually, with the result that as soon as it strikes the exposed hot sur-

* Extracts from an address delivered at Muncie, Indiana.

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663 Mission Street, San Francisco, where you will find the largest stock to select from, all at equitable prices.

faces, the chemically combined water of crystallization is gradually driven off in the form of steam, which, forcing its way through the material, floats it up, so that by the time the calciner is full to a depth of eight or ten feet, the mass within resembles a boiling fluid. The fire is maintained under the calciner and the disassociation of water of crystallization is permitted to continue until the desired point of calcination is reached, at which time gates are opened, the contents emptying into pits, where any steam remaining is liberated. The material thus produced is calcined gypsum, also commonly termed "stucco" or "plaster of Paris."

The products of gypsum may be divided into two general classes, the raw and the calcined, but as space will not permit, mention will be made of the calcined products only, and that as briefly as possible.

Calcined gypsum (often termed stucco or plaster of Paris) is used for the following general purposes:

Ornamental and decorative mouldings, column capitals, frieze panels, statuary, electric light fixtures, domes, etc.

For the bedding on the tables at plate glass factories to hold the glass while it is being ground and polished.

At terra cotta factories, to make molds for ornamental terra cotta, and at pottery works to make the molds for china and pottery ware.

By fireproof safe manufacturers, as a heat insulating medium within the safe construction, and in the insulation for cold storage rooms, pipe insulation, etc.

Calcined gypsum is also used in the construction of fire-resistive and other buildings for the following important purposes:

For gypsum plaster board.
For gypsum partition tile.
For gypsum furring tile.
For gypsum floor tile.
For gypsum floor screeds and floor filler.

Extensively used for incombustible roof decks as a "book tile" which is set between supporting "T" iron sub-purlins When reinforced (as for reinforced concrete), gypsum roof tile is being successfully used without purlins, the roof deck member being designed to rest direct upon the trusses or girders, which are spaced ten to twelve feet apart.

Reference to the manufacture of gypsum and gypsum products would not be complete without some mention of the objections sometimes raised to the use of gypsum for this or that purpose, which, in the majority of cases, are based upon structural defects entirely due to improper methods of handling or erection.

The plaster cracks upon plaster board, sometimes outlining the board joints, are due to insufficient plaster covering, poor plaster, and in general, work not done according to specifications.

Gypsum plaster board for wall and ceiling lath will prove satisfactory when plastered with not less than one-half inch of gypsum plaster applied in not less than two coats. Three coat work to a thickness of three-fourths inch gives excellent results, but in any case the manufacturer's specifications must be closely followed in all details of securing the plaster board and plastering. Plaster board must not be wetted before the application of the base or scratch coats.

Plaster cracks at the ceiling on gypsum tile partitions, and walls of this character are not due to shrinkage of the material as is commonly supposed, but are due to careless and imperfect workmanship. Gypsum does not shrink; if it did the shrinkage would be proportionately alike in all directions instead of being confined to a vertical dimension. Gypsum is used for the castings of models and molds in pottery work where it is not possible to use any material which would shrink. There will be no trouble when gypsum tile partitions are bedded upon a set and dry fire-resistive floor, are laid up with gypsum mortar, and are plastered in accordance with manufacturer's recommended specifications.

Gypsum furring tile, floor filler tile or domes, and floor screeds are extensively used, and with entire satisfaction when recommended methods for use are observed and with the same care exercised in construction that is given to good brick, terra cotta tile or concrete work.

The causes of plaster troubles that are the most frequent are easily traceable to their source. Investigation has revealed the fact that, in the majority of cases, the plastering material originally supplied was all right for the purpose intended, the trouble being due to, first, abuse of the material before use, and, second, improper use and application .

Most of the damage to plaster stucco occurs in transportation or during storage when leaky roofs, improper flooring and possibly exposure are contributory conditions to the possibility of the stock becoming wet in whole or in part before it is mixed for use. Plastering material which has become wet, even to so slight an extent as one-half pound to the sack, when mixed would set in the mortar box, and would have to be further retarded (as explained later) before it could be applied to wall or ceiling.

Another important precaution for material supply dealers is to store their plaster stucco so that in making shipments to any job the material on hand the longest will be sent out first. Stock that is too old will cause complaints of short working material.

This address would not be complete

without drawing attention to "Building Codes" and the importance of building regulations to the interests of supply dealers and others engaged in the building industry.

The annual fire loss of the United States is in excess of $250,000,000, representing a cost of about $2.50 per year for every man, woman and child. In Europe this cost averages only 33 cents for each of the population, and in Italy it is as low as 12 cents.

Contributory causes to this excessive waste are: carelessness, wholesale neglect of laws and ordinances governing the handling and storage of inflammable materials, also imperfect and improperly worded building regulations.

Of all the buildings erected annually, about one per cent are of fire-resistive construction, while ninety-nine per cent are of more or less combustible construction and materials, and yet, most of the regulations contained in the average building code regulate the one per cent of fire-resistive construction. The combustible building receives little or no recognition and no mandatory regulations which would make this type of construction safer from fire hazards occurring within, or from without.

For years plastering the ceilings and walls of buildings has been regarded as an ornate rather than a constructive part of the structure, and for this reason, even to the present time, there are few building codes that contain proper plastering regulations and still fewer that mandatorily require all the ceilings and walls of combustible construction to be plastered. So long as this attitude exists, and as long as the prevailing type of construction is combustible, the country's fire waste will not be materially reduced.

However, recently revised building codes indicate more consistent investigation in the preparation of sections governing the use of materials. This is well illustrated in the 1915 edition of the National Board of Fire Underwriters' Building Code, which specifies gypsum materials upon a parity with hard-burned clay tile for fireproof purposes, and gypsum plaster board upon a parity with metal lath as an incombustible lathing material. The 1907 edition of this code

contained no mention of gypsum. Gypsum tile as a fireproof material is permitted to be used upon a parity with other materials in most building codes under the term "or other approved fireproof material," and is specified by name for all fire-resistive partition and other purposes.

It is hoped that the day is not far off when building codes will be more generally uniform in regulating standard requirements, that the use of all building materials will be regulated upon scientific principles, encouraging keen competition and resulting in lowering the cost of fire-resisting construction; that all combustible construction by law will be required to have all ceilings and walls plastered on incombustible lath, and that all plastering shall be recognized as having appreciable fire-resisting properties and shall be regulated as to mixture, method of application and thickness.

A Correction

In the advertisement of Holbrook, Merrill & Stetson in the February issue of The Architect and Engineer appeared a picture of the new Santa Fe building and beneath the cut was the caption, "Steam-heating Plant Installed by Holbrook, Merrill & Stetson." It should have read, "Furnished by," as the installation was in charge of Mr. I. H. Pinkerton. The error was purely typographical and the publishers are very glad, indeed, to make the correction.

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Furnished in artistic white, cream, buff, or gray. Made in many desirable textures from a flat finish to a very rough cast.

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Who Has The Ship Contracts?

THAT is a live query in many an office and factory. The list shows the Pacific Coast is doing "its bit" to equip Uncle Sam with ships and more ships. A number of very recent contracts are not included in this list. All of the following orders were received from the Emergency Fleet Corporation:

Steel Ships

The data on 557 steel ships, of 3,914,200 tons, show that their total cost will be $651,627,046, or an average price of $166.48 a ton.

Merrill Stevens Company, Jacksonville, Fla., four ships, totaling 24,000 tons, to cost $3,864,000, or $161 a ton.

The Los Angeles Shipbuilding Company, San Pedro, Cal., eight ships, 70,400 tons, cost $10,883,840, or $154.60 a ton.

Skinner and Eddy Corporation, Seattle, Wash., six ships, 52,800 tons, costing $8,400,000, or $159.09 a ton.

Seattle Construction and Dry Dock Company, Seattle, Wash., ten ships, totaling 75,000 tons, costing $13,125,000, or $175 a ton.

Moore and Scott Iron Works, San Francisco, Cal., ten ships of 94,000 tons, costing $15,022,516, or $159.81 a ton.

Baltimore Shipbuilding Company, Baltimore, Md., eight ships, 70,400 tons, costing $11,123,200, or $158 a ton.

Downey Shipbuilding Company, 120 Broadway, New York, ten ships, 75,000 tons, costing $11,625,000, or $125 a ton.

Sun Shipbuilding Company, Philadelphia, Pa., four ships, 40,000 tons, costing $5,684,000, or $142.10 a ton.

Western Pipe and Steel Company, San Francisco, Cal., eight ships, 70,400 tons, costing $10,824,000, or $153.75 a ton.

Groton Iron Works, Groton, Conn., six ships, 52,800 tons, costing $8,184,000, or $155 a ton.

Saginaw Shipbuilding Company, Saginaw, Mich., six ships, 21,000 tons, costing $3,360,000, or $160 a ton.

California Shipbuilding Company, Long Beach, Cal., three ships, 18,000 tons, costing $2,728,320, or $151.41 a ton.

American International Corporation, Philadelphia, Pa., 50 ships, 375,000 tons, costing $57,750,000, or $154 a ton.

American International Corporation, 70 ships, 560,000 tons, costing $115,500,000, or $206.25 a ton.

Submarine Boat Corporation, 5 Nassau St., New York, 50 ships, 250,000 tons, costing $39,375,000, or $157.50 a ton.

Submarine Boat Corporation, 100 ships, 500,000 tons, costing $75,600,000, or $151.20 a ton.

Merchant Shipbuilding Corporation, 165 Broadway, New York, 40 ships, 360,000 tons, costing $54,776,320, or $152.15 a ton.

In the case of the last five named, the Emergency Fleet Corporation has extended financial aid in expanding yards.

Newburg Shipyard, Newburg, New York, four ships, 36,000 tons, $6,177,000, or $171.60 a ton.

Los Angeles Shipbuilding Company, San Pedro, Cal., ten ships, 88,000 tons, costing $15,136,000, or $172 a ton.

Jahncke Shipbuilding Company, New Orleans, La., six ships, 30,000 tons, costing $4,950,000, or $165 a ton.

Hampton Roads Dry Dock and Shipbuilding Company, Norfolk, Va., four ships, 29,200 tons, costing $4,818,000, or $164.68 a ton.

Federal Shipbuilding Co., 54 Dey St., New York, ten ships, 96,000 tons, $15,500,000, or $161.46 a ton.

Oscar Daniels Co., Woolworth Bldg., New York, ten ships, 95,000 tons, $15,349,000, or $163 a ton.

Erickson Engineering Company, Hanover National Bank Bldg., New York, ten ships, 94,000 tons, costing $15,980,000, or $170 a ton.

Bayles Shipyard, 115 Broadway, New York, four ships, 20,000 tons, costing $3,300,000, or $165 a ton.

Patterson-McDonald Company, Seattle, Wash., eight ships, 70,000 tons, costing $11,968,000, or $170 a ton.

American Shipbuilding Company, Cleveland, Ohio, six ships, 21,300 tons, costing $4,235,000, or $198.84 a ton.

Same company, thirty-four ships, 120,700 tons, costing $24,820,000, or $205.63 a ton.

Southern Shipbuilding Company, Charleston, S. C., sixteen ships, 120,000 tons, $19,440,000, or $162 a ton.

Pacific Coast Shipbuilding, San Francisco, Cal., ten ships, 94,000 tons, $15,792,000, or $168 a ton.

Pensacola Shipbuilding Co., Pensacola, Fla., ten ships, 90,000 tons, $14,580,000, or $162 a ton.

Groton Iron Works, Groton, Conn., twelve ships, 112,800 tons, $18,048,000, or $160 a ton.

Atlantic Corporation, Portsmouth, N. H., ten ships, 88,000 tons, $14,080,000, or $160 a ton.

Composite Ships

Fifty-eight composite ships, which are steel-framed with wooden covering, were contracted for with the following:

The Merrill Stevens Company, Jacksonville, Fla., is building twelve ships, total tonnage 42,000, total cost, $5,712,000, or $136 per deadweight ton.

The Terry Shipbuilding Corporation, Savannah, Ga., has 20 ships, 70,000 tons, costing $9,520,000, or $136 a ton.

Supple & Ballin, Portland, Ore., have eight ships, 32,000 tons, costing $4,400,000, or $137.50 a ton.

Kelly Atkinson Construction Company, Chicago, Ill., 18 ships, 63,000 tons, costing $8,100,000, or $128.57 a ton.

The total fifty-eight ships, will give 207,000 tons at a cost of $27,732,000, or an average of $133.97 a ton.

Wooden Ship Contracts

Sixty-five wooden ships are contracted for with concerns which furnish their own machinery. These ships will total 243,900 tons, at a total cost of $34,070,000, or an average per ton cost of $139.69.

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REPORTS AND ESTIMATES ON PROPERTIES AND PROCESSES

CHEMICAL AND PHYSICAL TESTING LABORATORIES

G. M. Standifer Corporation, Portland, Oregon, ten ships, 35,000 tons, $5,000,000, or $142.86 a ton.

Peninsula Shipbuilding Company, Portland, Oregon, four ships, 16,000 tons, $2,000,000, or $125 a ton.

Sloan Shipyard, Seattle, Wash., sixteen ships, 56,000 tons, $7,840,000, or $140 a ton.

Taylor Manufacturing Co., Allentown, Pa., ten ships, 35,000 tons, $5,000,000, or $142.86 a ton.

Lake and Ocean Navigation Company, Chicago, Ill., one ship, 3500 tons, $450,000, or $128.56 a ton.

National Shipbuilding Company, 120 Broadway, New York, twelve ships, 56,400 tons, $7,560,000, or $134.40 a ton.

Grant-Smith-Porter-Guthrie Company, Portland, Oregon, four ships, 14,000 tons, $2,220,000, or $158.57 a ton.

Hulls Without Machinery

Wooden ships to the total number of 298, of a tonnage of 1,045,000, and costing $88,691,000, or an average of $84.87 a ton, come under that class for which the Fleet Corporation is obligated to furnish the machinery.

McEachern Ship Company, Portland, Oregon, ten ships, 35,000 tons, $2,800,000, or $80 a ton.

Hammond Lumber Company, San Francisco, Cal., two ships, 7000 tons, $600,000, or $85.71 a ton.

Heldenfels Brothers, Beeville, Texas, four ships, 14,000 tons, $1,200,000, or $85.71 a ton.

Bantsler Shipbuilding Company, Moss Point, Miss., six ships, 21,000 tons, $1,800,000, or $85.71 a ton.

Grays Harbor Corporation, Aberdeen, Wash., four ships, 16,000 tons, $1,260,000, or $79.75 a ton.

Coast Shipbuilding Company, Portland, Oregon, four ships, 14,000 tons, $1,200,000, or $85.71 a ton.

Sanderson & Porter, 52 William street, N. Y., ten ships, 35,000 tons, $3,000,000, or $85.71 a ton.

Maryland Shipbuilding Co., Baltimore, Md., six ships, 21,000 tons, $2,100,000, or $100 a ton.

Foundation Company, Woolworth Bldg., New York, ten ships, 35,000 tons, $3,000,000, or $85.71 a ton.

Groton Iron Works, Groton, Conn., twelve ships, 42,000 tons, $3,600,000.

Ship Construction and Trading Co., 50 Broadway, New York, two ships, 7000 tons, $600,000.

Hillyer Sperring Dunn Co., Jacksonville, Fla., four ships, 14,000 tons, $1,200,000, or $85.71 a ton.

Portland Ship Company, Portland, Maine, four ships, 14,000 tons, $1,200,000, or $85.71 a ton.

Universal Shipbuilding Company, Houston, Tex., twelve ships, 42,000 tons, $3,600,000, or $85.71 a ton.

McBridge & Law, Beaumont, Texas, four ships, 14,000 tons, $1,200,000, or $85.71 a ton.

American Shipbuilding Company, 11 Broadway, New York, four ships, 14,000 tons, $1,200,000, or $85.71 a ton.

Tampa Dock Company, Tampa, Fla., four ships, 14,000 tons, $1,200,000, or $85.75 a ton.

Union Bridge and Construction Company, Morgan City, La., six ships, 21,000 tons.

Gildersleeve Construction Company, Gildersleeve, Conn., two ships, 7000 tons, $600,000, or $85.71 a ton.

Lone Star Shipbuilding Company, 111 Broadway, New York, eight ships, 28,000 tons, $2,400,000, or $85.71 a ton.

Johnson Shipyard Co., Shooters Island, N. Y., three ships, 10,500 tons, $900,000, or $85.71 a ton.

Henry Smith & Sons, Baltimore, Md., eight ships, 28,000 tons, $2,400,000, or $85.71 a ton.

Potomac Shipbuilding Company, Colorado Bldg., Washington, D. C., seven ships, 24,500 tons, $2,100,000, or $85.71 a ton.

J. N. McCammon, Houston, Texas, two ships, 7000 tons, $600,000, or $85.71 a ton.

Hammond Lumber Company, San Francisco, Cal., two ships, 7000 tons, $580,000, or $82.86 a ton.

Alabama Shipbuilding Company, Mobile, Ala., two ships, 7000 tons, $600,000.

Murnan Shipbuilding Company, Philadelphia, Pa., four ships, 14,000 tons, $1,140,000, or $81.43 a ton.

George A. Gilchrist, Thomaston, Maine, one ship, 3500 tons, $300,000.

Hodge Ship Company, Moss Point, Miss., four ships, 14,000 tons, $1,200,000.

Southern Shipbuilding Company, Orange, Tex., five ships, 17,500 tons, $1,500,000.

J. M. Murdock, Houston, Texas, two ships, 7000 tons, $600,000.

Midland Bridge Company, Morehead City, N. C., six ships, 21,000 tons, $1,800,000.

North Carolina Shipbuilding Company, Morehead City, N. C., two ships, 7000 tons, $600,000.

Morey & Thomas, Jacksonville, Fla., four ships, 14,000 tons, $1,200,000.

Cumberland Shipbuilding Company, Portland, Maine, nine ships, 31,500 tons, $2,700,000.

L. H. Shattuck, Manchester, N. H., 18 ships, 63,000 tons, $5,220,000, or $82.86 a ton.

York River Shipbuilding Company, West Point, Va., eight ships, 28,000 tons, $2,396,000.

Kruse & Banks, North Bend, Oregon, six ships, 21,000 tons, $1,740,000.

Fulton Shipbuilding Company, Los Angeles, Cal., four ships, 14,000 tons, $1,150,000.

Freeport Shipbuilding Company, Freeport, Maine, one ship, 3500 tons, $300,000.

Sommarston Shipbuilding Company, San Francisco, Cal., four ships, 14,000 tons, $1,200,000.

Kelley Spear Company, Bath, Maine, one ship, 3500 tons, $300,000.

Meacham & Babcock, Seattle, Wash., two ships, 7000 tons, $580,000.

Wilson Shipbuilding Company, Astoria, Oregon, three ships, 10,600 tons, $900,000.

Beaumont Company, Beaumont, Texas, four ships, 14,000 tons, $1,120,000.

Coos Bay Shipbuilding Company, Marshfield, Oregon, four ships, 14,000 tons, $1,120,000.

Housatonic Company, Stratford, Conn., ten ships, 35,000 tons, $2,775,000.

Nilson & Kelez, Seattle, Wash., four ships, 14,000 tons, $1,200,000.

George F. Rodgers Company, Astoria, Oregon, four ships, 14,000 tons, $1,200,000.

Seaborn Shipbuilding Company, Seattle, Wash., eight ships, 28,000 tons, $2,400,000.

St. Helen Shipbuilding Company, San Francisco, Cal., two ships, 7000 tons, $600,000.

Benicia Shipbuilding Company, San Francisco, Cal., two ships, 7000 tons, $600,000.

Wright Shipyards, Tacoma, Wash., two ships, 7000 tons, $600,000.

Feeny & Bremer, Tillamook, Oregon, one ship, 3500 tons, $300,000.

Tacoma Shipbuilding Company, Tacoma, Wash., four ships, 14,000 tons, $1,200,000.

Newcomb Lifeboat Company, Hampton, Va., four ships, 14,000 tons, $1,200,000.

Grant-Porter-Smith-Guthrie Company, Portland, Oregon, twelve ships, 42,000 tons, $3,600,000.

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The School Architect and Transportation

By J. W. FRICKE, Associate Editor

TOO little consideration is generally given by the school architect to educational facilities which, if proper co-ordinated with the school plant, would greatly increase the satisfactory operation of the school group. The architect is personally responsible for the proper design of the school plant, but his services should not be finished with the completion of the buildings. Frequently his efforts to bring about better school conditions by higher efficiency buildings are entirely annulled through the use therein of educational facilities which are obsolete or unsatisfactory. In ever-increasing proportion the school district is coming to look to the architect in an advisory capacity for those items other than buildings which enter into the successful operation of the school. The progressive school architect, realizing this, is laudably recommending for use in connection with his school plant only that equipment which will make more useful the building facilities offered. From the architect's viewpoint the carrying out of recommendations so made is practically essential. Of what avail becomes a building built for proper ventilation in which no ventilation is permitted; a well-lighted plant from which correct lighting is barred? The smaller equipment details so essential to the obtainance of correct results are too often neglected to the detriment of the school plant—and the reputation of the architect. In truth, big results are but the sum total of little details. "Recommendations" by the architect, as invariably expected and desired by the school board, relating to the correct operation of the school when completed, are even more essential to the furtherance of the profession than insistance over essential building details. Building details, when incorporated into the specifications, are automatically cared for. Unfortunately equally necessary corollaries of proper equipment facilities are too often disregarded to the detriment of the architect's professional and personal reputation. It should constantly be remembered that a chain is no stronger than its weakest link.

A Modern Heavy Duty Motor School Car.

In outlying city schools, as in the rural union schools, proper transportation facilities should be insisted upon by the modern school architect. Of what avail is it to have efficient building and teaching facilities if the presupposed arrival of scholars in a receptive state of mind is voided by their arrival mentally tired and depressed, through riding in hot, stuffy, abominable school conveyances, illy ventilated, crowded and uncomfortable. Instruction during the recuperative period so required is wasted. Under present war time conditions, with the inevitable commercial and racial battle following the advent of peace, schools must operate at 100 per cent efficiency, if never before.

* * *

Insist upon the school district owning and operating its own transportation conveyances. Any other course invites disaster. The frequent custom of school districts contracting for transportation with outside sources places such transportation upon a purely commercial scale. Equally well might teachers be hired by competitive bids without examinations as to their fitness. A transportation contract so arranged invites the contractor to make just as much profit out of it as he can. He invariably obtains the cheapest equipment and drivers possible, as his only desire is to maintain the minimum conditions required by his contract, so as to return the greatest possible profit to himself. It is self-apparent that any contract so made will of necessity be more expensive to the school district than would by direct district ownership of transportation. If a driver disagrees with the district, a new driver can be obtained at a moment's notice. Even the school janitor can be drafted into service temporarily. When the contractor disagrees the school dis-

Interior Heavy Duty Motor School Car.

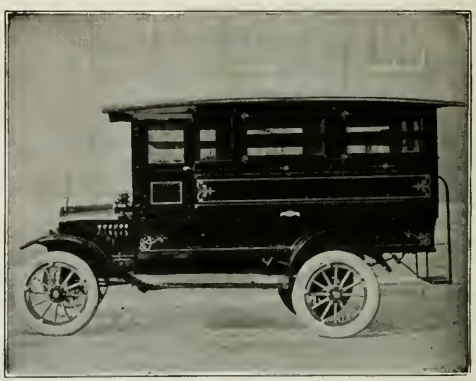
trict is helpless until new transportation facilities can be secured, frequently a matter of weeks, if not of months, and of incalculable expense to school efficiency and finances. As a vitally necessary adjunct to the greatest efficiency of the union school plant designed, architects and engineers should insist upon district ownership of proper transportation facilities.

The United States Bureau of Education, Department of the Interior, has studied the effect of transportation upon the efficiency of the school plant most carefully. Their report is embodied in Bulletin 1914, No. 30. In it they strongly urge district ownership of school transportation conveyances. Recommendation is made of glass enclosed conveyances, constructed essentially for the purpose of properly transporting school children.

As the consolidation of schools initially developed in the Eastern States, so of necessity the corollary transportation first received attention there. From the contract system as originally observed in Massachusetts, the district ownership of conveyances was worked out in full detail in Indiana, where the compulsory transportation law nurtured the greatest development of correct school conveyances. With Indiana, the Central States rapidly came into the field of consolidation. There is now not a State in the Union in which union consolidated schools can not be found.

Too often custom has denied, through a mistaken sense of democracy, particular attention to a distinctive educational commodity, to the detriment of general educational facilities nationally. From a particular object can best be obtained a general idea of necessary provisions for correct transportation. This is especially true when such an object is nationally accepted as the working standard. For this reason mention is made of those conveyances constructed by The Wayne Works, of Richmond, Indiana, whom, as the largest and most progressive works today constructing school conveyances, have, through their location and pioneer experience, had an opportunity of studying most carefully the correct transportation principle and embodying their national experience in their product, as illustrated in this editorial.

School transportation is ordinarily divided into two classes—horse-drawn and motor-driven. Where road and weather conditions permit, automobile transportation is preferable. Automobile transportation is quicker, equally reliable and ordinarily as economical as horse-drawn. In outlying country districts the national custom in the past has been to initially utilize horse-drawn conveyances, replacing them with motor-driven cars as rapidly as improved road conditions would permit. In California, where excellent roads and equable climate are ideal for motor transportation, motor school cars



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are therefore advisable and should be recommended.

Motor school cars are classified in two divisions, light and heavy duty. The light duty is intended for longer routes with few scholars, where speed is essential in order to cover the route on pre-determined schedule. The car illustrated is admirable for this purpose. It utilizes the Ford chassis, permitting known quality of service, economical upkeep, immediate repair stock and unlimited possibilities for drivers. A relief spring attachment carries the additional weight necessitated by the twelve to fifteen pupils transported. Heavy duty cars are constructed for greater capacities and shorter routes. They are obtainable in either twelve or fourteen foot body lengths for varying route capacities. The truck chassis illustrated is formed by the standard Ford chassis in combination with a truck attachment specially constructed for the severe service required. As the weight carried is greater, the so-called ton truck attachments are inadvisable. The attachment shown is very strongly constructed and answers the requirements perfectly. The fourteen-foot body shown seats twenty-five to thirty children, while the twelve-foot seats twenty to twenty-four.

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Safety is a paramount issue. These cars mount so low that overturning is impossible at any speed obtainable, while being entirely glass enclosed the driver can not have his vision obstructed. Sanitation is assured through the removable upholstery, unbroken body lines and freedom from germ harboring places. The cars can be thoroughly washed out if necessary without injury to them. So tightly can the cars be closed that even complete fumigation is possible over night, without interruption to the school schedule. Perfect ventilation is assured through overhead adjustable steel ventilators, permitting a 50 per cent over supply of fresh air if desired. Seating requirements are met by deep angled seats and back, with wide aisles between. Proper lighting is given through glass windows all around. The interior of the car is finished in natural wood, refracting the light downward on the darkest days. Cars are light and cheery. Comfort is obtained through deep resilient automobile spring cushions. Protection from the elements is obtainable in any weather. In driving rain the cars are completely waterproof. The bodies are so constructed that water must run up hill to enter. Through automatically adjustable windows all around, driving through a straight downpour does not necessitate closing the body up tightly, to the great discomfort of the occupants, as the upper windows can be partially opened, throwing off the rain while allowing splendid ventilation to the children. In fair weather the entire car can be opened to the breezes as the windows and door open the full width entirely around the body. Perfect care of children en route is assured, as the driver is seated inside with the children, supervising their conduct. Children so transported arrive at the school with minds alert and receptive, ready to assimilate fully the instruction made possible by superb building facilities.

The horse-drawn conveyance practically duplicates the motor-driven so far as the advantages made possible by excellent construction are concerned. They are available in ten, twelve and fourteen foot bodies on either platform or reach gears, to meet satisfactorily all school route requirements.

The architect need not fear that his recommendations will necessitate an extravagant expenditure. Quantity production and standardization have precluded that. The additional feature of greatly reduced delivered charges is accomplished through forwarding cars crated, taken apart for assembly on arrival if desired. The exceptional combination of quality with extremely low prices will make, through the architect's recommendation, better transportation at lower costs possible to the school children of the Pacific Slope.

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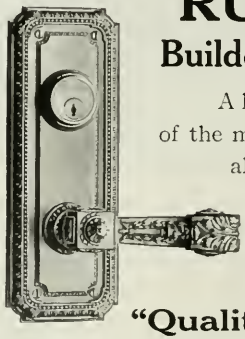

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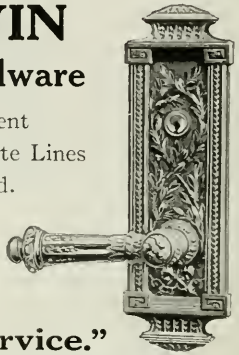

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Dairy and Farm Equipment Wanted

Mr. Max E. Cook, formerly secretary for Mr. Houghton Sawyer, a San Francisco architect, is devoting himself to model farm planning and the betterment of rural structures, both architecturally and from the utilitarian standpoint. The subject of properly housing farm laborers is a very important one just now, and Mr. Cook has some investigations under way for the State Commission of Immigration.

In a letter to the editor of this magazine Mr. Cook says:

Particularly, do I wish to have my name kept on the mailing lists of material supply houses, more especially those who have products adaptable for farm buildings and farm use generally. Among the special subjects and equipment that most interest me and that I will have occasion to buy or specify are dairy barn equipment, such as patent stalls, litter and feed carriers, hay loading tools, milking machines, separators, various types of pens, watering devices, self feeders, poultry house equipment, tanks, pumps, farm engines, implements of all kinds, electric light plants, heating plants, water supply systems, tanks, windmills, silos (cement, wood, hollow tile, etc.), fencing, etc.

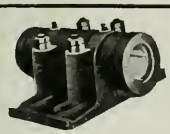
Mr. Cook's address is 4434 View street, Oakland.

Lease New Warehouse

The new four-story Class "C" warehouse to be erected on Spear street, southeast of Mission, San Francisco, from plans by Mr. W. H. Ratcliff of Berkeley, has been leased to the Wm. Cluff Co., wholesale grocers.

Contract for Steel Viaduct

The State Harbor Commission has awarded a contract to the Ralston Iron Works, 20th and Indiana streets, San Francisco, for furnishing structural steel for the viaduct to relieve traffic congestion from the foot of Market street over the Embarcadero to the second floor of the Ferry building, San Francisco.



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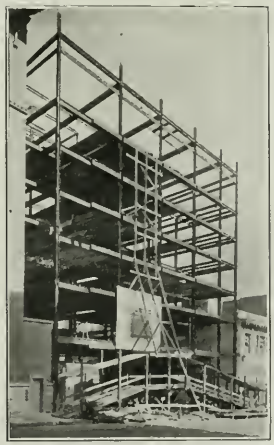

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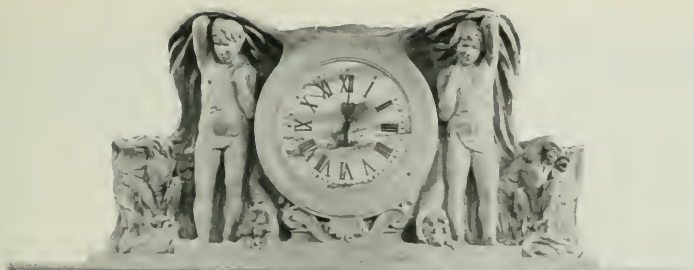

THE ARCHITECT & ENGINEER
OF CALIFORNIA

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Published Monthly at 626-627 Foxcroft Building, San Francisco, in the interest of
ARCHITECTS, STRUCTURAL ENGINEERS, CONTRACTORS AND THE ALLIED TRADES OF THE PACIFIC COAST

Yearly Subscription $1.50
Single Copy, 25 cents

Entered at San Francisco Post Office as Second Class Matter

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RESIDENCE OF MR. E. F. ROBBINS, OAK KNOLL, PASADENA
MYRON HUNT, ARCHITECT

Frontispiece
The Architect and Engineer
of California
for April, 1918

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THE
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APRIL, 1918 Vol. LIII. Number 1

The Work of Mr. Myron Hunt, F. A. I. A.

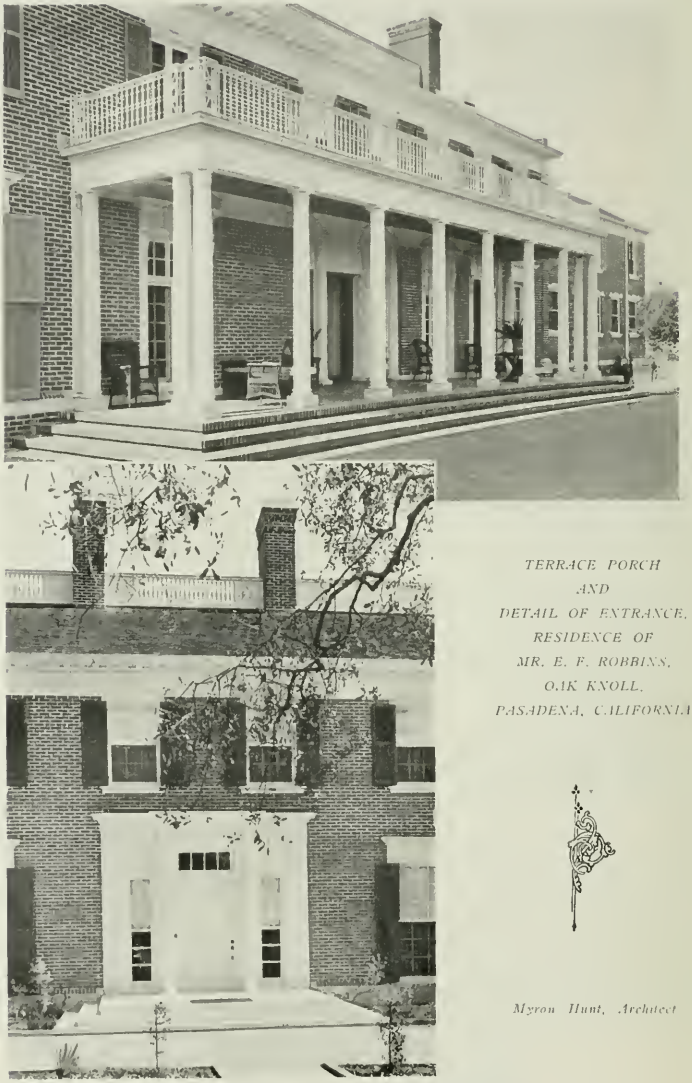
By DAVID C. ALLISON, Architect

Transept, North Window, First Congregational Church, Riverside.

CERTAIN periods arise in the architectural growth and development of every community, when it is a matter of the greatest importance to it that men of character, ability, vision and force be found to assist in handling the reins of leadership—in the forming of proper standards and establishing of right ideals.

San Francisco passed through such a period after the fire, and of the quality of men found, the excellence of much of her architecture speaks eloquently. In Los Angeles and Southern California generally, about fifteen years ago, we were entering upon what has proven an epochal movement in building, and of the men who arose to meet the emergency as architects none has proved more healthful and hopeful and inspiring, as strong, influential factors in our subsequent life and growth, than has Mr. Myron Hunt. It was, indeed, a fortunate day for Southern California when he decided to make his home there and to work there. He had, prior to his coming, practiced a number of years in the East, with such success that his was one of the names well known in the profession throughout the country. As a younger man, after completing his college work at the Northwestern University and Boston Tech, he was able to treat himself to a residence of some years in Italy, where he acquired a basis and groundwork, no doubt, for the mature judgment, excellent taste, and

Beach Cottage for Mrs. M. S. Burnes



TERRACE PORCH AND DETAIL OF ENTRANCE, RESIDENCE OF MR. E. F. ROBBINS, OAK KNOLL, PASADENA, CALIFORNIA

Myron Hunt, Architect

RESIDENCE OF MR. E. F. ROBBINS, OAK KNOLL, PASADENA, CALIFORNIA

Myron Hunt Architect

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THE E. F. ROBBINS
RESIDENCE,
OAK KNOLL,
Myron Hunt, Architect

Garden of Mr. Myron Hunt

nice discrimination so evident in the work shown in the following pages.

Upon coming to California, he was consequently thoroughly equipped not only with a broad, liberal education, but with a practical experience in building that have enabled him to meet in a big way the opportunities that came to him, and to attract opportunities, and, as is at once apparent, they have been numerous and varied indeed.

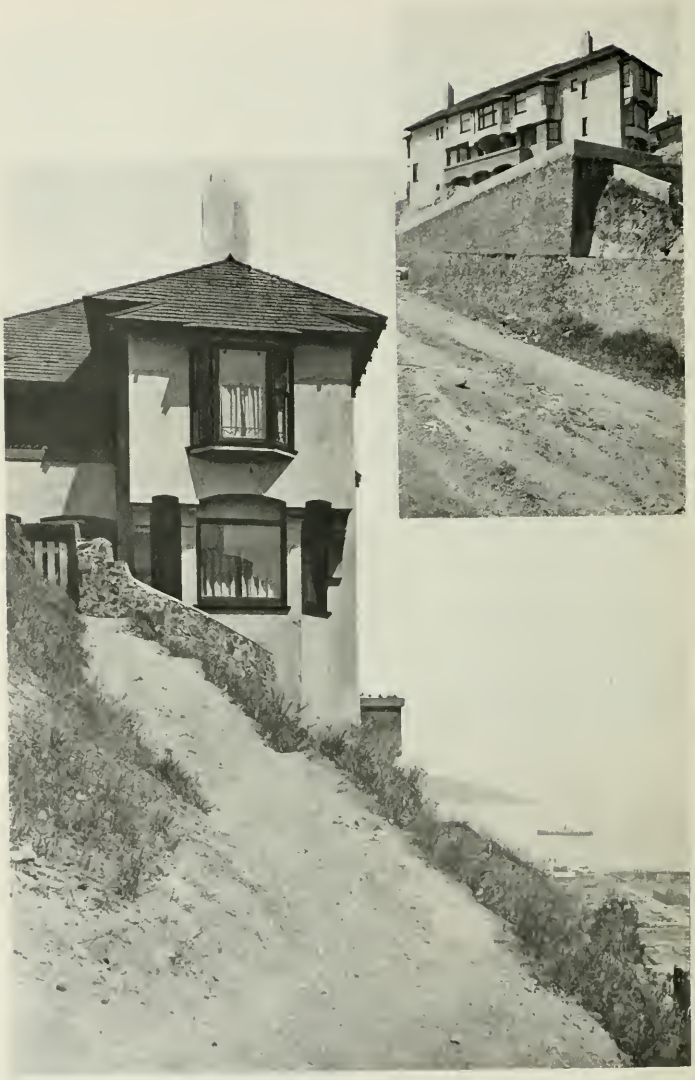
In the entire volume of work shown, including in its range hotels, college groups, numerous residences, gardens, a bridge, a church, and a club, are evidenced a versatility, freedom and sureness seldom met with in the work of one man, and while practically all of the so-called styles have been drawn upon, it is obvious, by the freedom with which it is done, that the style in any archeological sense is a matter of indifference to Mr. Hunt. He has not gone to the extreme of absolute sufficiency on the one side, expression of which tendency, in some, we see in the many vagaries dotting the country over, nor has he, on the other hand, placed a too great reliance upon precedent.

Of the hotel work, perhaps the most interesting is that done at the Glenwood Inn, Riverside, a mixture suggesting both Venice and Spain, at once co-ordinating with and acknowledging the old building which was of California Mission type and adding a new interest and charm by the infusion of a more highly developed architecture of the same genesis. The striking contrast of large openings and small ones, broad wall surfaces of fine texture, relieved by rich wall decorations in fresco, sculptured ornament and iron grilles have all contributed to make one of the most charming courtyards in America. It is used practically the year round as an outdoor dining room for the hotel. A huge, richly colored awning, suspended high up at the roof line, protects from the direct rays of the sun in summer. Unfortunately no photographs are at present available of this courtyard, and the one of the so-called art gallery gives no adequate impression of its picturesque detail and incident, or of the beauty of its proportion.

A most interesting ceiling was devised to serve temporarily in this room, and so successful has it proven that it deserves permanency. It is formed by suspending upon large two-inch oil derrick ropes, dipped in creosote, acres, almost, of common gunny sacking, pieced together, and gilded with a cheap dull gilt applied with a whitewash gun.

In the completing of the Hotel Huntington was presented to Mr. Hunt the very difficult problem of taking hold of an old monolithic concrete structure, begun some fifteen years ago in a sort of Mission-Chicagoesque-German Lloyd style, about three-fourths completed and left a picturesque ruin upon a hilltop in Oak Knoll, Pasadena, until

Garden of Mr. Myron Hunt



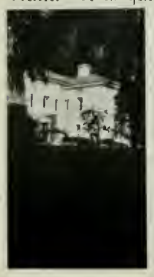
HILLSIDE RESIDENCE OF MR. LIVINGSTON JENKS, SAN FRANCISCO
MYRON HUNT, ARCHITECT

Mr. H. E. Huntington took over the property some three years ago and commissioned Mr. Hunt to finish it. The manner in which he gathered up the loose strings, added extra stories, and gave a completely new character to the architecture is most interesting. It was thought advisable in the two stories to be added over the central part to make thirty large rooms with baths over the area occupied by sixty rooms on the lower completed stories. This offered a difficult structural problem, which was solved by frankly appropriating five feet of height on top of the old work in which to prepare a foundation of beams and girders to carry the upper stories, the new part being separated from the old by a balcony which serves as a flower garden in front of each room, and also makes less noticeable the difference in window spacing and scale of the old and new work. The central tower not only gives the necessary climax to the composition, but serves the purpose of a water tower for the establishment as well.

Patio, the Bard Residence

At the Hotel Maryland in Pasadena has been inaugurated a system of bungalows grouped about a lovely greensward looking out from the principal hotel parlors. The treatment of store fronts, garden pergolas, and the cottages shown in the photographs is of interest.

The Spanish Colonial church at Riverside presents one of Mr. Hunt's best adaptations of that style. The fact that no additional ground was available at the time of its erection, but was a possibility of the future, lead to a most interesting disposition of the plan, i. e., the placing of the pulpit at the front or tower end of the building, and the using of the transept wings as a Sunday school, the main entrance being from a cloister extending along the street side of the nave, the whole arrangement meeting the requirements in such satisfactory manner as to be highly suggestive for other denominational churches, as a relief from the usual ungainly square auditorium. The solution strikes one as peculiarly typical of the resourcefulness of Mr. Hunt. It is quite like him to think of putting the pulpit in the front of the church in such event, and, having thought of it, to do it forthwith. The tower and the arcade at the side of the nave are particularly happy in composition and detail—all a trifle new as yet, and in need of the softening time will impart.



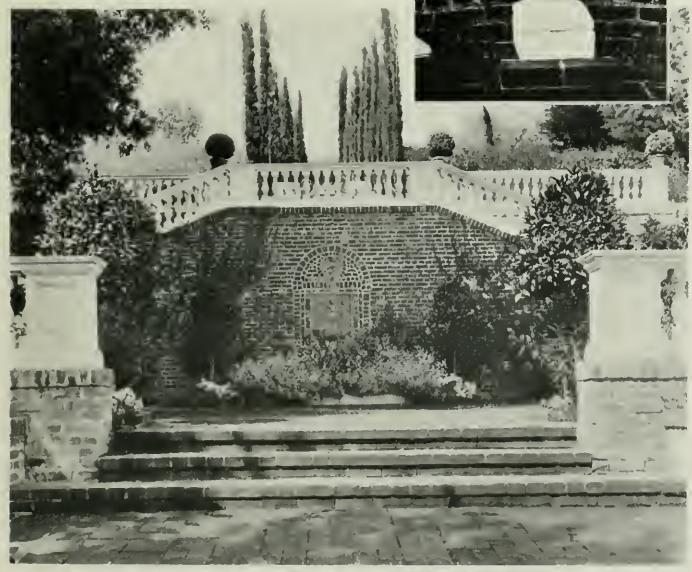
The Bard Residence

Very conspicuous among Mr. Hunt's achievements are the buildings done for Occidental and Pomona colleges.

At Pomona three or four old buildings were already on the site and were determining factors in arriving at the general layout shown. The architecture adopted is a restrained Spanish Colonial; each of the buildings complete and interesting as solutions of particular problems. The baroque redwood ceiling of the music building, richly stenciled in colors of blue, green, red and gold; the organ front,

BUNGALOW FOR MRS. C. W. PARDEE, PASADENA
MYRON HUNT, ARCHITECT

SCULPTURE ON RIGHT BY MAUDE DAGGET



THE LORING GARDEN, SAN RAPHAEL HEIGHTS, PASADENA
MYRON HUNT, ARCHITECT

RESIDENCE OF MRS. E. M. FOWLER, CHINO
MYRON HUNT, ARCHITECT

RESIDENCE OF MRS. E. M. FOWLER, CHINO, CALIFORNIA

high wainscoting and galleries with their gilded balusters, the happy proportion of the room itself, the daring use of color, all so well done as to produce what is perhaps the most distinctive room in Southern California. At the rear of the music room proper, and attached to it, are two practice room wings treated as a colonnaded patio surrounding a bit of simple greensward, in the center of which is a basin with a graceful flute player in bronze by Burt W. Johnson, sculptor.

At Occidental College Mr. Hunt was not handicapped by existing buildings. His problem was to do a small college for not over five hundred students, and in the scale and arrangement of the buildings he has striven for an intimate—almost domestic—character, rather than one monumental. An unusual parti was adopted for heading the vista up the main axis—a simple two-story colonnaded façade, after the manner of the University of Padua, completely closing the vista. Mr. Hunt defines the architecture generally as a California adaptation of the Mediterranean spirit. The manner of taking care of the grades and adjusting the belt courses to the different levels, as shown in the photograph of Fowler Hall, are interesting and successful. The detail is everywhere exceptionally well handled.

Southern California has become more or less associated with a peculiar type of cheap wooden house characterized by extreme projected roofs, usually two or three gables telescoping, leap-frog fashion, supported (?) by cyclopean timbers extending back to the wall upon which they are supposed to rest, and nailed to it, and all carried down mysteriously to a final porch plate, each end of which rests perhaps on an extremely busy 4x4 post; the most honest and overworked stick of wood in the building—which may or may not be permitted the solace of a supporting pier of many tons of nervous brickwork. This type of building, the peculiar mania for black mortar, and the use in walls of masses of writhing, unhappy fused brick, each apparently doing its best to squirm free from the rest, has fortunately about passed, and it is to the sane, steadying influence of such work as is here shown, which continued its way serenely through the period referred to, that we are indebted greatly for the more hopeful era in house building upon which we are now entering.

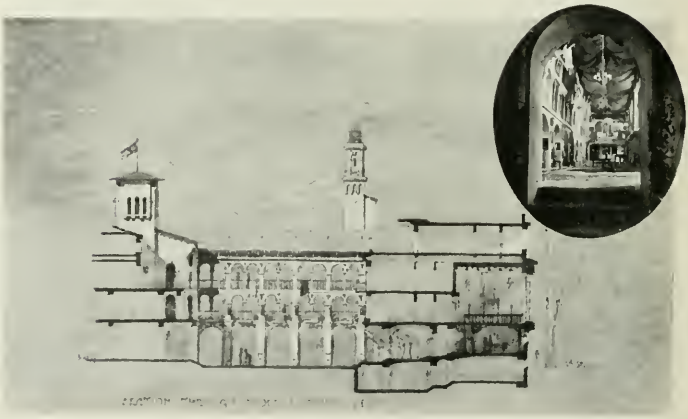
Residence of Mr. S. C. Fertig

RESIDENCE OF MRS. GRAHAM BABCOCK, TENAFLY, N. J.
MYRON HUNT, ARCHITECT

THE RUSSELL TAYLOR RESIDENCE, LOS ANGELES
Myron Hunt, Architect

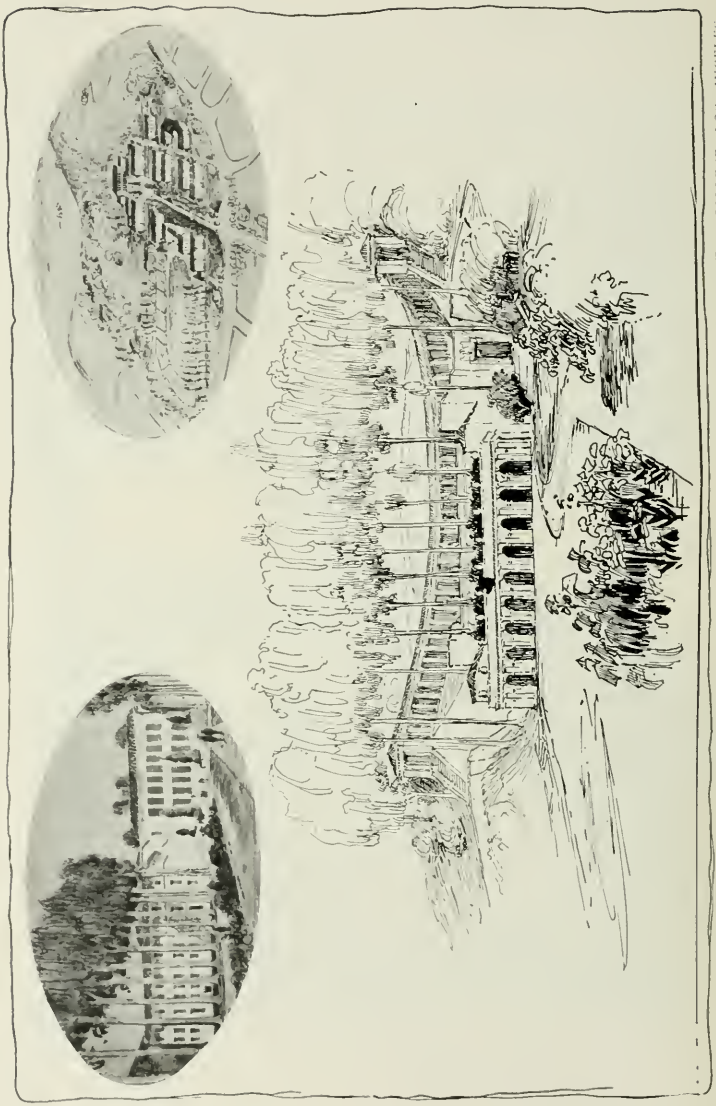
THE RUSSELL TAYLOR RESIDENCE, LOS ANGELES
Myron Hunt, Architect

RESIDENCE AND CHAPEL FOR MAJOR PESHINE, SANTA BARBARA
Myron Hunt, Architect



SECTION AND INTERIOR, SPANISH COURTYARD, GLENWOOD MISSION INN, RIVERSIDE
Myron Hunt, Architect

PATIO, THE J. G. McNARY RESIDENCE, EL PASO
MYRON HUNT, ARCHITECT



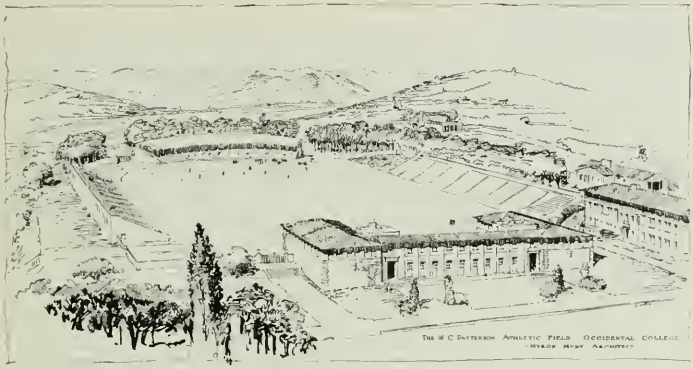
OCCIDENTAL COLLEGE, LOS ANGELES
MYRON HUNT, ARCHITECT

ENTRANCE DETAIL,
FOWLER HALL,
OCCIDENTAL
COLLEGE,
LOS ANGELES

Myron Hunt, Architect

FOWLER HALL, OCCIDENTAL COLLEGE
MYRON HUNT, ARCHITECT

PLAN OF CAMPUS, OCCIDENTAL COLLEGE, LOS ANGELES
MYRON HUNT, ARCHITECT



ATHLETIC FIELD, OCCIDENTAL COLLEGE, LOS ANGELES
Myron Hunt, Architect

SWAIN HALL, OCCIDENTAL COLLEGE, LOS ANGELES
Myron Hunt, Architect

Cloister, Occidental College

Simplicity and good taste—how fundamental they are! What a debt of gratitude is due to the men who have known them and pursued them consistently, patiently educating the public, and placing about the younger architects, to whom exuberance is always so much easier than restraint, the example of the better way.

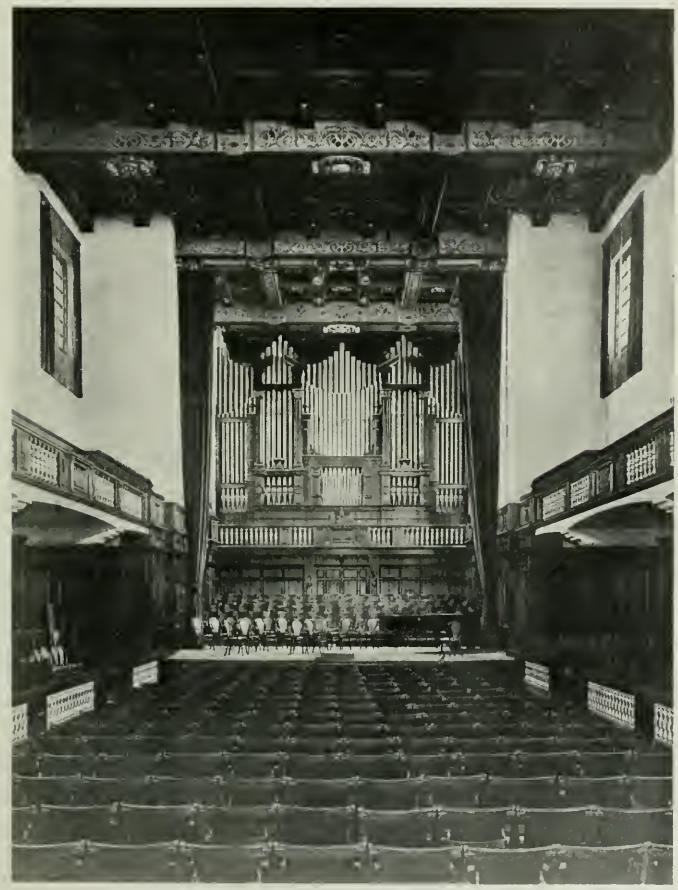
Such work as the Robbins and Taylor houses in Pasadena, and the Babcock house at Tenafly, New Jersey, each represents in its own way a fine grasp and understanding of the beauty inhering of our best Colonial work. We have all noticed the recent tendency toward over-refinement; where delicacy and fineness have been carried to such extremes as to make the design look weak, even effeminate. When delicate attenuated proportions are chosen, the designer must detail them with corresponding delicacy, with extreme subtlety; and he must know that subtle proportions demand more than do heavier ones, strength and firmness and character in every line. The difference of a small fraction in a belt course, a capital, a frieze, an overhang or projection may decide success or failure of the work as design. To do this sort of thing well requires the most exquisite taste and judgment, and successful work of the kind will be particularly appreciated by those who have tried in their own practice to catch and preserve its elusive charm.

In the Fowler house at Chino should be noticed the outdoor stairway to the second story, an interesting California treatment of the feature. Here, too, the iron work is especially worthy of notice. The small Pardee abode at Pasadena is the only bungalow Mr. Hunt has done, and leads one to regret that fact extremely. More delightful still, if possible, in its naive charm is the little dormitory building for the George Junior Republic at Chino, which was unfortunately burned a short time ago, but is being now replaced by the two-story reinforced concrete building shown on the same page. This two-story building gives promise of being equally successful. The drawings of the Pershine, Jutten, and Holladay residences are current work and not yet completed.

In Mr. Hunt's gardens there is apparent a breadth and simplicity of treatment, an avoidance of mechanical or trivial effects in planting, and an adherence to the less formal and naturalistic—he catches much of the spirit of the old-fashioned places. How often do we see the contrary, where gardens are mechanical, hard, fussy with a surfeit of angular brick walls, numerous little paths, steps, and levels, all spick and span, without sufficient background of shrubs and trees. The wall fountain in the Hooker garden, Los Angeles, is most charming, also the pool and delightful little piper by Maude Dagget in Mr. Hunt's own garden.

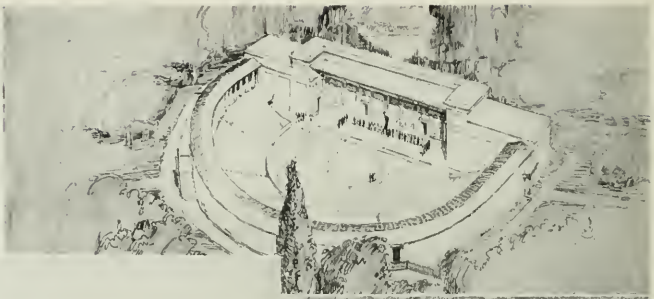
Bridge, Colorado Street, E. Pasadena

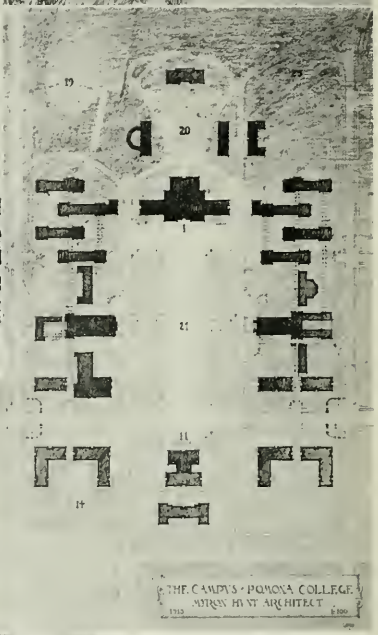
Rather unusual as a problem for an architect is the lower-level bridge across the Arroyo Seco in Pasadena, designed by Mr. Hunt for the use of a private property owner, and



CHAPEL AND ORGAN, POMONA COLLEGE, LOS ANGELES
Myron Hunt, Architect

successfully made to take its place and add to the interest, rather than detract from it, of the exceptionally good public bridge overhead. The intelligent and successful execution of this commission is one other example of the versatility of Mr. Hunt's powers and experience.



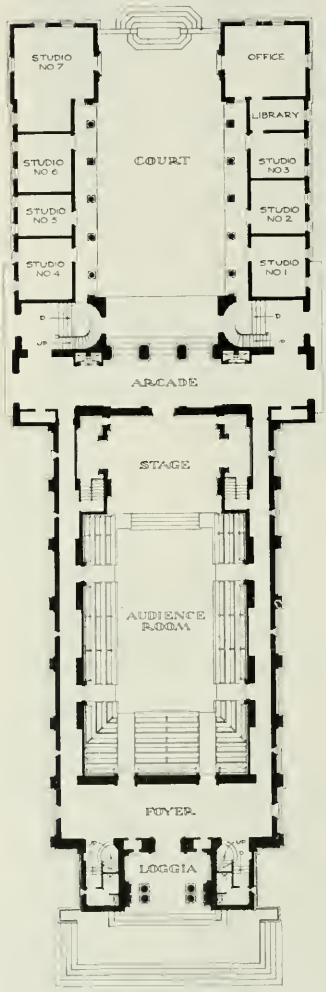


OPEN-AIR THEATRE, MUSIC BUILDING, PLAN OF CAMPUS AND FOUNTAIN,

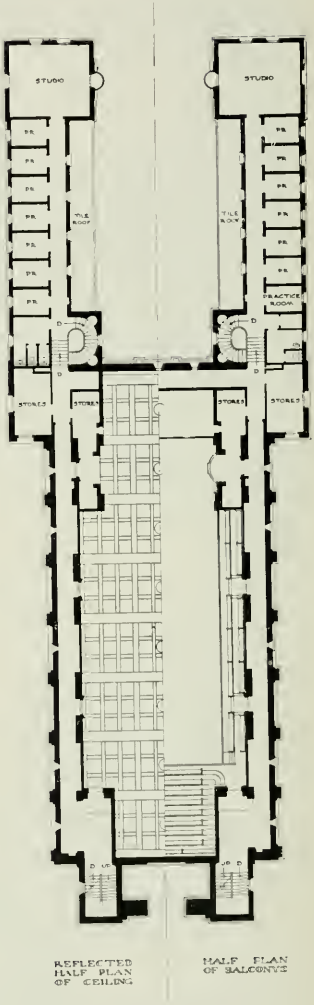
POMONA COLLEGE

Myron Hunt, Architect
Burt W. Johnson, Sculptor

MAIN FACADE AND ELEVATION, MUSIC BUILDING, POMONA COLLEGE. VIEW THROUGH DOORWAY SHOWS PORCH OF ART BUILDING

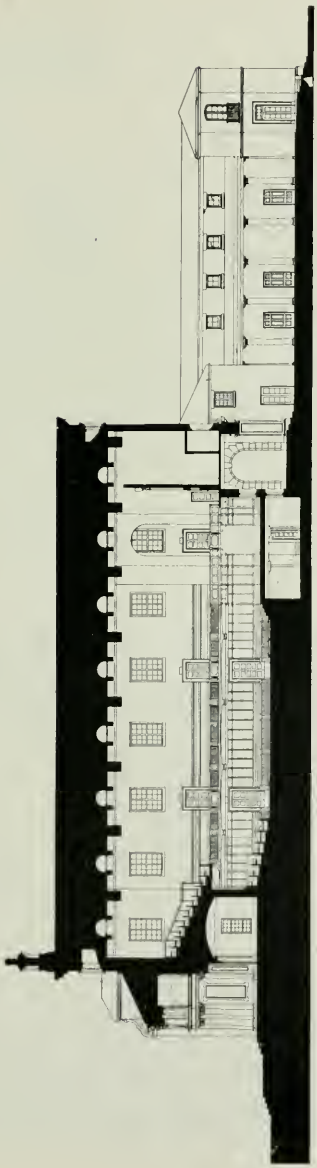


FIRST FLOOR PLAN



SECOND FLOOR PLAN

ART BUILDING, POMONA COLLEGE
MYRON HUNT, ARCHITECT



LONGITUDINAL SECTION

ART BUILDING, POMONA COLLEGE POMONA, CALIFORNIA
MYRON HUNT, ARCHITECT

FIRST CONGREGATIONAL CHURCH, RIVERSIDE

INTERIOR, FIRST CONGREGATIONAL CHURCH, RIVERSIDE
Myron Hunt, Architect

HOTEL HUNTINGTON, OAK KNOLL, PASADENA
Additions and Alterations MYRON HUNT, ARCHITECT

BUNGALOWS, HOTEL MARYLAND, PASADENA

THE PERGOLA, HOTEL MARYLAND

HOTEL MARYLAND PERGOLA SHOPS PASADENA
MYRON HUNT, ARCHITECT

COTTAGES, GEORGE JUNIOR REPUBLIC, CHINO, CALIFORNIA
MYRON HUNT, ARCHITECT

MT. WILSON OBSERVATORY OFFICE BUILDING, PASADENA

ELKS CLUB, PASADENA, CALIFORNIA
Myron Hunt, Architect

The Peridiotic Cottage—A Foil for the Bungle-Ode

By ARTHUR S. HEINEMAN, Architect*

IN YOUR March issue, I read the truth about the Bungle-Ode, and I am minded to discourse upon the Peridiotic or Colonial type of cottage—pronounced cottäge, as in garäge or cabbäge.

The Peridiotic cottage is designed by an archi-choke, and by the time it is completed the owner invariably hopes that he will or has.

As all are aware, period things had their origin in the Orders. The Orders were taken—not given—and the incubation of the Peridiotic cottage involves the "following of Orders if it breaks masters"—and it usually does. These houses are done in a style or type of architecture, and by the time the modern needs are shaped to the ancient style the cottage achieves all its Peridiotic appendages.

An ancient proverb sayeth: "Hew to the line, let the quips fall where they will," and "there's a destiny which shapes men's ends, rough hew them how we may." The appendages of a Peridiotic style of architecture and decoration, when dwarfed into a modern cottage, do enough to the destiny of the architect without the rough hewing that the client does to him.

So much as to effect. Now as to caws:

Exteriorly speaking, over the front door is placed a deleted eyebrow—arranged to shed not even a tear.

The front porch is provided with a guard rail, so that the opening of the front screen door won't catapult the porch occupant onto the flower beds.

Above the front door is a fan window—baseball parlance—meaning it doesn't make a hit.

From the exterior the windows are arranged symmetrically, equally spaced, and the spaces equally divided, so that you are constantly reminded that the architect had a tape line—and used it. In fact, that is the principal impression you get—the measured-off effect—and each time you pass and re-pass the house you measure it up with your eye, hoping to find that they slipped up an inch or so and that you may go and tell the architect about it.

And the windows are all full of panes, and the housewife has to take still more pains to keep them clean. Generally they are in squares, like a checkerboard, and the flies learn to jump from square to square—sort o' spec-ulating on them.

This symmetrical arrangement of the windows on the exterior has a sporadic effect on the interior. The windows are sort o' sillymetrically in the rooms. Everything in the room is what you might call in profile—or three-quarter-wise—because of those windows. They pop up in all sorts of places, and wherever you expect and hope and want a wall to be—there's your window; and where you really want a window—for a beautiful view or a charming vista into a pergola or something—why, there's a nice, full-sized, transparent section of plastered wall.

The best thing about the living rooms with the windows arranged symmetrically for the exterior is the wall spaces. Pianos, particularly baby grands, if intended for use, are hung with chains from the ceiling. It's the only way to place them in the room and not disturb the sillymetriceness of those windows.

*San Fernando Building, Los Angeles.

Outside and adjoining and abutting and bounding those windows are shutters—green ones. The shutters might be called openers. At least they are never shut; usually they can't shut; but they are ornamental and decorative and cute. It's a case of form following function, just like the nose ring of a cannibal—ornamental, decorative, cute, and oh! so functional!

Most of these Peridiotic cottages have eaves—not overhangs and exposed rafter ends—oh, dear, no. Nothing so vulgar and indecently exposed as that! Just nice, smug, useless, and enclosed Eaves. Too short to protect the walls and windows from the beating of the summer sun; too short to save the windows from the driving of the semi-tropic rains; not wide enough to create an air eddy as under the broader overhang which pulls the heated air from the room; just a dear, chopped off, useless—snub-nosed Eve—designed in the paradise of its own misunderstood function, because A-dam architect is wedded to it.

The other parts of the interior of the house are really very livable; and if you can forget and forgive its effect of Prunes, Prisms and Priscillas, and the hard-and-fast four-squaredness of it—you can, by the use of modern touches and the expression of your own free soul, in the choice and arrangement of furnishings, really live along very sweetly and independently.

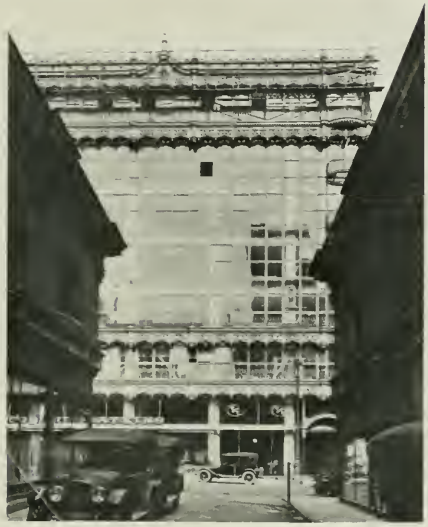
True, the life of peace and independence is not always compatible with period type residences, but the cottages as a class escape the fungus of varying and multi-period rooms which usually clusters the larger houses of this type. I have passed through dwellings wherein each room was done—well done, one might say—in a different period of architectural and decorative treatment—one of those houses, you know, of which the decorator proudly boasts that the owner gave him carte blanche—and I, for one, am all fed up on decorator's "carte blanche" houses. As you go from room to room, to avoid the blind staggers you must make a complete metamorphosis, and if, like tabby, you have nine perfectly good and husky lives, you may survive. As you are conducted through a Victorian hall, a Baronial dining-room, then a Louis Quintz salon, mein host's daughter, affecting to live up to her surroundings, lifts pince-nez and says, "Je ne sais pas," to which you reply, "No, I didn't see your pa, but there's a hell of a lot of other queer-looking things here."

Period rooms, abutting and abounding in one defenseless house, are nothing but cheap sensations, artificially produced—a sort of second-hand realism—and realism is vulgarity under a mask of authority.

The use of well-chosen words to conceal one's meaning is the very apex of oratory; hence the above.

From all the great and unblushing world truths that have gone before, the reader may have concluded that the Peridiotic cottage is wholly without merit. Such an assumption would be well founded were it not for the barrage of protecting and saving qualities about to be divulged:

The saving genius of the Peridiotic house is the housewife. Battling like a Greek at her Thermopoli, though she sells dearly her long cherished ideals of livableness and homelikeness, she must be entirely annihilated by architectural barbarism before she will sacrifice the stronghold of convenience. And preferring a living client to a dead prospect, the architect, not unmindful of his fee, sacrifices art for art's sake, and fills the cottage with the thousand and one contrivances and conveniences that have made the bungalow—love's hand maiden—the children's paradise—and the old maid's temptation.



HALLIDIE BUILDING, SAN FRANCISCO
Willis Polk & Co., Architects

The World's First Glass Front Building

SAN FRANCISCO'S first notable contribution to modern construction was reinforced concrete. From that bridge under the south drive in Golden Gate Park and immediately to the west of the Haight street entrance, there has developed, step by step, the art of reinforced construction culminating a few days ago in the launching of the largest concrete vessel afloat.

San Francisco's second contribution to modern construction bids fair to be the entire glass front to business buildings. To get as much light as is humanly possible for business and manufacturing structures is the problem of the architect of today.

There is theoretically possible in buildings a frontage of 100 per cent of glass. This is practically obtained in the Hallidie building, owned by the Regents of the University of California and recently completed on Sutter street, between Kearny and Montgomery, from plans by Messrs. Willis Polk & Company, architects. Ordinarily buildings have a frontage of from twenty-five to fifty per cent of glass.

Nothing like this building has ever before been attempted in the world. It has the germ of an idea which architects throughout the country will undoubtedly seize and develop. It is no exaggeration to say that in this building San Francisco has the starter of what promises to become a new feature in business block construction—particularly for department stores and loft purposes.

It was particularly a happy thought to name this building after the late A. S. Hallidie. Hallidie will be remembered by thousands of an older generation of San Franciscans. His part in creating the cable street railroad gave him a worldwide fame. His manufacturing interests were based on solid worth. For years he was a member of the Board of Regents of the University. The Regents of today acted wisely in perpetuating his memory by attaching his name to this radical departure in construction.

The university colors—blue and gold—are used in its exterior decorative work. The building is so out of the ordinary in design and appearance that pedestrians have been known to spend an entire lunch hour discussing its unusual features. Naturally, a variety of comments were heard and when the building was under way Mr. Polk took keen delight standing close by while the critics gave vent to their impressions. On one occasion Mr. Polk noticed two young men discussing the building with more than ordinary fervor. The conversation ran something like this:

"I can tell you the name of the architect of any prominent building in San Francisco just by looking at the building."

"Is that so. Well, who designed this one?"

"Louis C. Mullgardt."

"Wrong."

"Then it was Kenneth MacDonald." At this point Mr. Polk felt it his duty to interrupt the conversation.

"Is it as bad as that?" he asked apologetically.

And then the architect suggested that if his critics would look on the Time Board, showing progress of construction and which was in plain view of the two they might be able to discover the architect's name without further guess-work.

* * *

Following is a description of the building, written by Mr. Polk for the Alumni Fortnightly, published by the University of California:

"With regard to the building, it might be of interest to record in your journal the following facts:

"First—Distinction might be claimed for it as a successful commercial enterprise. Its final cost exceeded by only one-tenth of one per cent the original appropriation. The net extra cost, exclusive of tenants' requirements (for which the tenants pay interest), was less than $250.00.

"Second—From the beginning of construction to occupancy less than six months transpired. This fact, while not remarkable in normal times, is creditable under conditions that exist at the present time. There were to be met certain theoretical conditions comprising the high cost of material and the scarcity of labor that is now popularly supposed to exist—these obstacles fortunately did not prove to be insuperable.

"Third—This building has variously been dubbed 'The Daylight Building,' 'The Frontless Building,' 'The Camouflage Building,' 'The Chinese Joss House,' etc., etc. As a matter of fact, with the exception of the treatment of its street front, it is not an extraordinary building. It is well constructed—in fact, if anything, it is over-constructed. In an ordinary commercial enterprise it would be more than likely that it could have been more economically built, but in deference to the advisers of the university and in compliance with demands of the Board of Public Works, elements were accepted that have

produced more than requisite strength in construction. Therefore, we will take it for granted that it is one of the safest and strongest buildings ever built, yet because its front is practically 100 per cent glass it has the semblance in the public eye of being a dangerous and a fragile structure. The popular query is, 'What will happen in an earthquake? What will become of the mass of glass?' No single pane of glass in this front is more than half the average size of most of the glass in most of the buildings in all the world. Many other queries have arisen, but, like the query as to whether an iron ship would float or sink, or as to whether or not a concrete ship of stone was not a pure fallacy, these queries may safely be charged to the proverbial incredulity of mankind, which will not willingly accept innovations. This building is probably the first entire glass-fronted building ever constructed. Vienna, Paris, London, Chicago, New York and Quebec, Canada, have, ever since the perfection of structural steel skeleton and reinforced concrete forms of construction, essayed to give agreeable expression to this new type of architectural design.

"Conservative judgment has, in caution, camouflaged its desire by clothing such steel skeletons or concrete frames in a semblance of masonry—either stone, brick or terra cotta—but with creditable patience has awaited a successful experiment along the lines of true simplicity—lines upon which all enduring forms of art must ever be founded. It should not be claimed for the Hallidie building that this experiment, however bold, is in any sense successful, but it is certainly an innovation, and its chief distinction, if it has any distinction at all, probably rests upon the fact that it is the first building ever constructed with an entire glass front.

"Incidentally, modern building conditions demand fire escapes; in most buildings up-to-date fire escapes have been grudgingly accepted by their designers and have seldom, if ever, been successfully treated. In most instances, while they are frankly utilitarian, they are nothing less than a disfigurement. In this building they have been accepted as a part of the problem and have been treated as a part of the artistic composition of the design.

"Finally the color treatment of this building has been the occasion of widespread discussion and no apologies for it are offered. It being a building belonging to the University of California, a blue and gold scheme naturally suggested itself. It also being solely constructed as a commercial investment building, a successful handling of a blue and gold scheme was not within the confines of a limited commercial appropriation. Give a good workman dull tools, he cannot do good work—give a poor workman sharp tools, he cannot do good work; but, give a good workman sharp tools, he must do good work or lose his job."

* * *

Architects Buy Liberty Bonds

SAN FRANCISCO architects have contributed liberally to all three Liberty loan campaigns. Their subscriptions to the third loan will probably run close to $30,000. The committee in charge of the canvass of architects for bonds which were taken in sums varying from $50 to $1000, was composed of Messrs. Louis C. Mullgardt (captain), John Reid, Jr., John Galen Howard, W. C. Hays, Walter C. Bliss, Frederick H. Meyer, John Bakewell, Jr., Clarence R. Ward, Smith O'Brien, William Mooser, and S. Schnaittacher. The Architect and Engineer was entered with the architects for the purchase of $500 worth of bonds, making a total subscription of $6000 that this magazine has made to the three Liberty drives.

Repairing Cracks in Concrete Roofs

A CORRESPONDENT writing to a London contemporary describes the manner in which cracks in a reinforced concrete roof were repaired as follows:

"A concrete roof, reinforced with 4-in. I-section iron joists, was made in a certain building. The span of the roof was 12 feet and the joists were placed every 3 feet apart. As sometimes happens in such roofs, the concrete had settled down on the lower flanges of the joists, thus forming a cavity along the entire length of the joists and on each side of them.

"The formation of these cavities weakened the overlying concrete, causing it to sag on both sides of the joists, with the result that a crack running the length of the joists appeared centrally over each joist. In rainy weather these cracks and cavities were able to store up water which gradually found its way into the building.

"To remedy these defects a 'trough,' 8½ inches by 1½ inches, was cut out over each joist, so that the cracks then ran along the floors of the troughs. The sides of the troughs were slightly undercut. Next the cracks themselves were cut so as to be 1 inch wide and to penetrate as far as the upper flanges of the joists. In order to reach the cavities a series of 'pour holes' were made from the floor of the trough, through the concrete to the cavities. The pour holes were made on both sides of the joists, but never opposite each other, and were a few feet apart.

"The whole surface was then carefully dusted and wetted, and a grout of 1 part cement, 1 part sand and 2½ per cent Pudlo was poured through each pour hole. Then a mixture of 2 parts of fine annealed slag, ½ part sand, 1 part cement and 3½ per cent Pudlo was used to complete the filling up of the cracks and cavities up to the level of the floor of the trench or trough. Having allowed this to consolidate, the trough was filled up with the same mixture, being reinforced with strips of expanded metal, No. 6.

"Another portion of the roof which had sagged very much in places was well hacked, treated in the above-mentioned manner, then given a Pudloed coat, 2½ inches thick, over the grouting."

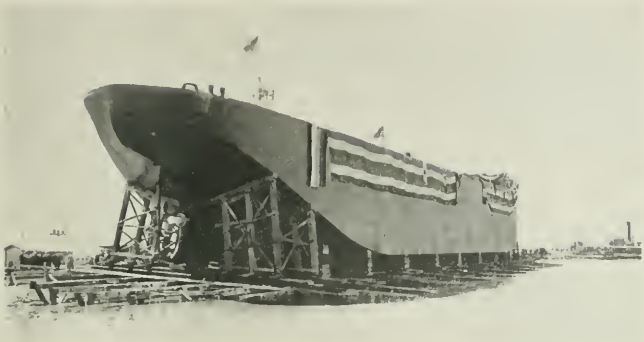
* * *

Architects Have Right to Full Fees

THE rights of architects to payment according to scale recognized by the profession in the province of Quebec were upheld in the Superior Court in a judgment recently rendered by Justice Lafontaine.

Messrs. N. Aulet and Rene Carbonneau sued the Montreal Apartment Company, Limited, for $5,000, this sum being due in payment, on a basis of two and a half per cent of the cost of construction of a $200,000 building, the plans of which had been prepared by the plaintiffs under the company defendant's instructions. It had been intended to erect the building at the corner of St. Matthew and Dorchester streets, but the proposal was not carried out, and when the architects made a claim for the regular fees the defendants pleaded that a special agreement had been made under which the plaintiffs were to be paid only one-fifth of $10,000.

Justice Lafontaine said the proof clearly established that the plaintiffs were engaged to prepare plans of a building that was to cost $200,000, and they were entitled to recover fees on the basis recognized by the profession. Although the defendants had not given effect to their project to construct the building, but had ceded the site to Hebert & Lamoureux, they were liable to pay for the plans the plaintiffs had prepared. Therefore, the court condemned the company defendant to pay the amount claimed, namely, $5,000, and the costs of the action.



CONCRETE SHIP "FAITH," BEFORE LAUNCHING

Success of the Concrete Ship

THE world's first concrete ship of any considerable size has been launched in Pacific waters and if the satisfactory outcome of the event is any criterion the future success of the concrete ship industry would seem to be established.

The Faith—for that is the name which the builders have appropriately given this new water craft—is now being equipped with machinery which will propel her on the voyage that will demonstrate the boat's fitness for the most strenuous sea going service. San Francisco is naturally proud of the men who have contributed money and ingenuity to make this boat possible. It would not be fair to put all the glory on one shoulder. The praise belongs to many—engineers, financiers, mechanics, laborers.

It is perhaps not saying too much to predict a complete revolution in shipbuilding if the "Faith" shall prove seaworthy and durable. Few engineers skilled in reinforced concrete design have ever doubted the possibil-

CONCRETE SHIP "FAITH," AFTER LAUNCHING

ity of making a successful concrete vessel of great size, so far as mere strength is concerned. Nor have many engineers questioned the economy in first cost. The main doubt has been as to the resistance of concrete ships to shock. This, it is felt, can be successfully determined only by actual experiment with the vessels themselves.

By June 1 the Faith will be ready to make her maiden voyage to Honolulu with a cargo. She will return with a cargo of copra.

The storms of the Pacific will test the Faith. The stresses and strains that concrete vessels must meet never have been determined.

"If she can withstand the beatings of the waves," President Comyn is quoted as saying, "the world will have to recognize that concrete vessels are a success and entitled to place in the front ranks of ships."

The first timid boat of reinforced concrete was made in France in 1849 by M. Lambot, a citizen of Carces. The little boat was nine feet long and its chief wonder was that it floated. Lambot exhibited his handiwork at the World's Fair in Paris in 1855, and patented his process, and that was the end of it.

Norwegians and Italians turned their hands to concrete barges and vessels for inland waters. Most of the vessels were of 100 or 200 tons dead weight, and the appeal to purchasers in time of war and overtaxed shipyards was based chiefly on speed of construction.

No concrete vessel approaching the Faith in size ever was built anywhere in the world. The Faith will have a speed of ten to eleven knots an hour.

The Faith is 336 feet long, 44½ feet of beam, 30 feet deep and 5000 tons dead weight. Its sides are 4 inches thick (German pill boxes, built inside the German lines to combat the British tanks, are 8 inches thick, and it is said a shell may throw them in the air, but cannot break them.)

Empty, the heavy concrete vessel drew nine feet of water. Loaded to capacity of 5000 tons of cargo, the Faith will draw twenty-four feet of water. Her designers believe the Faith is so heavy that no ballast will be necessary; there is no provision for carrying ballast in her structure.

The floor of the vessel is about 4½ inches thick. Her sides are 4 inches thick, reinforced in the bow by a great steel shoe. Steel of an aggregate weight of 550 tons is formed into an intricate network that webs the concrete structure.

The three holds of the vessel, which are placed well forward, are divided by six concrete bulkheads. A water-tight wooden flooring rests on the bottom beams and forms an inside hull. The main deck is of wood, laid on concrete stringers, and the cabins are of wood. The shelter deck is concrete.

The great advantage of the concrete ship is that, while it costs $500,000 for a steel shipbuilding yard, the Faith was built in a yard which cost only $15,000. Such yards may be scattered all along the Southern and Western coasts, where the weather conditions are favorable for concrete mixing the year around and all the necessary materials are easily available. And furthermore, experts declare the concrete ship costs less to build, irrespective of yard investment.

* * *

That the Federal Government has faith in the ultimate success of the concrete vessel is evidenced by the order placed by the United States Shipping Board for the immediate construction of three more concrete ships at San Francisco, larger than any heretofore built. Each boat will be 50 per cent larger than the Faith. The tonnage of concrete vessels has been fixed by the Shipping Board at 7500. The United States Government has further shown its confidence in concrete ship construction by approving a $50,000,000 appropriation for experimental work.

The Challenge of the Housing Problem

By NOBLE FOSTER HOGGSON.

A CHALLENGE not only to the sound judgment, but to the idealism of the American business man lies in what has come to be called the "industrial housing problem." Behind these matter-of-fact words is a world of vital significance affecting the greater, more efficient, more beautiful America for which forward-looking men are beginning, in a large way, to plan.

The solution lies neither in sentiment alone nor in unmitigated business sense; it is comprehended, however, in that mixture of the two qualities which makes for the greatest social value and personal success in industry.

The practice of providing suitable homes for workers is in its infancy in America. England has solved the problem with characteristic British slowness and thoroughness. But in America, the land is as yet too new, the genitive forces of industrial opportunity as yet too prolific, labor as yet too plentiful, to have brought this incidental but altogether vital problem to more than a merely tentative solution.

The Great War, however, has been the Great Precipitator,—it has crystallized conditions that would otherwise have been a generation, a century or a quintet of centuries in flux. The housing problem in the United States has been moved up at least a generation. Where yesterday it was with many industrial organizations a matter of sentiment or casual experiment, it is today a problem of grim necessity,—though it will never find a real solution until sentiment mingles with business judgment to produce a humanly likeable, workable result.

The reason why the housing problem cannot be dealt with solely in a cold, logical, business fashion should be apparent to everyone. That it is not apparent is evident from the fact that many attempts at solving the problem in America have resulted unsatisfactorily.

The English student of the housing problem provides a dwelling that combines comfort with ample space and general coziness. There is usually a garden, a breathing space, the mercy of vines and trees to soothe the weariness from toil-worn senses which too often do not sense their own needs. The garden is no less important than the sanitation, the ventilation,—nay, more important in many respects than the house itself.

There is no need to point out the obvious fact that the competition for labor in the United States is stiffening daily. The appeals for conscription of labor, the efforts of manufacturers to prevent competitive bidding for labor, the general but usually mistaken complaint of labor shortage—all bear witness to this fact. Far more practicable than all the solutions thus far offered is proper housing.

But proper housing does not mean mere shelter. Man is a sentimental animal. His holiest sentiment centers about the home. Home ties mean contentment; if they do not, they are not ties for long. They mean attachment to locality, they mean a vital interest in the community; they mean, most of all, a sense of security which implies—the psychologists and the workmen themselves tell us—permanence, comfort and enthusiasm in one's surroundings. This was the meaning of the English cottage and garden.

The problem of housing then is, first of all, one for the employer. He cannot trust it to a real estate speculator, whose chief aim is too likely to be the exacting of the largest, quickest return which the necessity of the employe can be made to yield. The real estate speculator is the

commercial antagonist of both employe and employer. He usually succeeds in driving the employe away in numbers large enough to cost the employer much in energy, worry and profits.

The problem is also one for the community and particularly for those members of the community who profit most by its healthy, sound and consistent growth. Chief among these members is the banker. But merchants should also be interested, as well as the owners of traction companies, and all those who are possessed of a disinterested civic pride.

So in the cities where the individual employer cannot meet the problem, it is properly one for a stock company composed of employers, bankers, merchants, and those advocates of civic betterments who prefer a garden suburb to long rows of poorly planned, ill-built, altogether mentally and financially depressing flats and shacks—miscalled cottages.

There is, however, a larger and more important phase of the problem than any thus far considered here. The new world contact which has been thrust upon us within the last few years brings an obligation to create a new, more beautiful, more efficient, more glorious America. The foundation of that America must be labor; well paid, contented labor; and only such labor can be depended upon in the period of all-inclusive readjustments and reconstruction which may be thrust upon us at any time by the end of the World War. Proper housing,—housing that, no matter who the laborer, or what his habits, creates the permanent home sense, will be an important determining factor in the situation.

As the future of America depends upon such labor, it is naturally a proper object of government encouragement.

We have built our nation by aid to homesteading farmers; one of our chief privileges and obligations today is to apply ourselves to the problem of adequately housing, not housing, labor, to the future greatness and glory of America.

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McAdoo Says, "Build Needed Residences"

"IT is impossible to lay down a hard and fast rule as to what every patriotic citizen should do in living up to his duty in this connection," said Secretary McAdoo in a letter to Mr. Frank W. Conner, a Washington representative of the American Lumberman, elaborating on his recent statement urging curtailment of building operations during the duration of the war. "Things that are necessary for the life and health of the people must, of course, be procured.

"So it is with the building of homes. It is obvious that it is unnecessary for me to elaborate the point that building operations absorb the very materials and the very class of labor and the very kind of money that the government requires most urgently at this time.

"Where it is a question of building a new home simply because it would afford greater comfort the operation should not be undertaken. Where it is a question of need—be it on account of sanitary conditions or because, without such construction, other operations essential at this time for the welfare of the country would suffer—there is no doubt that the work should be undertaken.

"This applies equally to construction work in cities and towns and in farming districts."

Schedule of Charges for Engineering Services

AS an addendum to his paper presented at the annual meeting of the Illinois Society of Engineers, Mr. Edmund T. Perkins, President of the Edmund T. Perkins Engineering Co., Chicago, Ill., submitted the following schedule as a suggestion of what should constitute reasonable compensation for engineering services.

The various services rendered are classified as follows, and are generally charged for on a percentage basis, except surveying which should be per diem.

1—Reconnaissance.
2—Preliminary reports.
3—Surveying.
4—Plans and specifications.
5—Details.
6—Supervision and progress estimates.
7—Superintendence.
8—Alterations.
9—Professional advice.
10—Consultation.
11—Court work or arbitration.

Reconnaissance work is necessary when no data, or incomplete data, have been secured, and is preliminary to general planning of project and securing of data.

Preliminary reports are made when the necessary data on which the report is based have been secured of such detail and accuracy as to permit of proper advice being given or design made.

Surveying covers every class of field work which is not a part of reconnaissance work. It includes all location lines for roads, canals, railroads, etc., all level lines, all sinking of wells or experiment work, besides all classes of land surveying and land sub-division, and compensation therefor should be on a salary or per diem basis with expenses paid.

Plans and specifications are required as the basis for letting of contracts or for the information of the owner, employer or consulting engineer, and afford a full description of the work. They are implied by the necessities of the work even when not required by the owner, and include an estimate of the cost of the work. Plans, when adopted and approved, must be so endorsed by both owner and engineer.

Details are not always an essential of the construction work, and the rate charged, therefore, is flexible, varying with the amount of detail work.

Supervision and the making of progress estimates should always be required, that the engineer responsible for the plans and specifications should be satisfied, by personal inspection that the specifications are fully complied with and satisfactory progress made. When superintendence is paid for, as defined in the next section, there is no additional charge for supervision.

Superintendence of construction must be had by a superintendent mutually acceptable to owner and engineer. The schedule rate for superintendence applies when the engineer who has designed and planned the work, or his assistant, superintends construction. All other employes than such assistant or assistants are to be paid by the owner.

Alterations may be required at any time by the owner, or become necessary by reason of unforeseen conditions or changes in the size of projects. The schedule rate applies to such alterations as may be required by the owner—alterations becoming necessary by reason of unforeseen conditions or accidents are covered by percentage charges on the aggregate costs.

Professional advice is always charged for according to interests involved, charges being based on value of services rendered, not on time required in arriving at conclusions or opinions.

Consultation with engineers who have made certain branches of professional work a specialty may be requested by the engineer having general charge of the work, or may be required by the owner. Charges for consultation work being based on value of services rendered, not on time required in arriving at conclusion or opinion.

Court work as an expert or as arbitrator in settlement of controversies, condemnation proceedings, etc., in the interest of the owner, is entitled to additional pay at a rate to be agreed upon.

Schedule rates cover compensation only for engineering services: that is, the services of the engineer and his engineer assistants.

All expenses incurred for materials, blue prints, or for transportation, hire of helpers, rodmen, chainmen, teamsters, conveyances, and living expenses when away from regular place of business, are a separate and additional charge against the owner, as is a reasonable charge for general office expenses.

Time of payment is according to agreement; but usually is arranged on the basis of a preliminary payment, or retainer, and an advance for traveling or other expenses aside from services; and further payments on account, if the commission extends over considerable time.

Final pay for preliminary reports is due upon presentation of report.

Final pay for reconnaissance work is due upon completion of same.

Pay for supervision or superintendence becomes due on progress estimates made for payments to contractors, or, if work is done by day labor, on monthly appraisements of work done.

All percentages are computed on the contract price or actual cost of work.

When construction covered by plans and specifications is not carried out, pay for these plans and specifications is due upon completion of the estimate of cost of work.

The several items of payment on the percentage basis become due from time to time when the class of service has been rendered.

Per diem rates apply to an eight-hour day. Extra time is charged for on a basis of one and one-half time on week days, and twice time on Sundays and legal holidays.

TABLE OF CHARGES—ON PERCENTAGE BASIS.

	Less than $5,000.	$5,000 to $10,000.	$10,000 to $20,000.	$20,000 to $50,000.	$50,000 to $100,000.	$100,000 to $200,000.	$200,000 to $500,000.	Over $500,000.
	%	%	%	%	%	%	%	%
Reconnaissance	2.0	1.75	1.5	1.0	0.75	0.5	0.4	0.3
Preliminaries	1.5	1.0	0.8	0.6	0.5	0.4	0.3	0.2
Plans and specifications	4 0	3.5	3.0	2.5	2.0	1.5	1.3	1.2
*Supervision	2.0	1.8	1.5	1.3	1.1	1.0	0.8	0.6
*Superintendence	5.0	4.5	4.0	3.5	3.5	3.0	2.8	2.4
†Alterations	7.0	6.5	6.0	5.5	5.0	4.5	4.0	3.5
Everything from beginning to completion of job	12.5	10.75	9.3	7.9	7.4	6.0	5.3	4.2

*Supervision not charged for when superintendence is.

†Alteration relates only to value of work involved in the alteration.

Note—Percentages are computed upon the entire cost of the completed work, exclusive of engineering, or upon the estimated cost pending execution or completion of same. "Cost" refers only to such part or parts of the whole work or project as the engineer may deal with.

TABLE OF CHARGES—ON PER DIEM BASIS.

Chief engineer—$500 retaining fee, $100 a day while absent from office and expenses.

Assistant chief engineer—$50 a day while absent from office and expenses.

Topographers, assistant engineers and chiefs of parties—$15 to $25 a day while absent from office and expenses.

Designers—$12.50 a day while absent from office and expenses.

Instrument men, draftsmen, computers—$7.50 a day while absent from office and expenses.

Stenographers, chainmen, axmen—$3.50 a day.

Note—Attendance at court or expert testimony for any fraction of a day is considered as a full day.

A fixed fee for services rendered may be charged by agreement where a long engagement for professional services is contemplated, the engineer may accept such retainers on a yearly basis, at a compensation not less than that of the permanently employed engineer of the client. Except in cases where the compensation of the engineer is in the form of an annual retainer, the agreement between the engineer and his client should specify the period of time during which the compensation of the engineer, as determined by per diem charges, fixed fee, or agreed percentages, shall apply. If, through no fault of the engineer, the work should not be completed within the time so specified, an additional charge may be made, the basis for which, if practicable, should be agreed upon in advance.

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A Note Concerning the Burnham Plans

The editor, in speaking to a city planner and landscape architect visiting New Orleans recently in a consulting capacity, asked his opinion on the Burnham plans for Chicago, Manila, San Francisco, and other plans for cities made at about the same time—say, from 1900 to 1910. The answer was, that practically all these drawings fall under the head of transition plans, covering that period in the development of the city planning idea in America when it was just emerging from the "park," "city beautiful" and "landscape" idea. "The civic center" was the main idea of all so-called city plans of that period. The more modern idea of intensive studies of the economics of competition, traffic, production, and sociology, that form the basis for a city plan of today, was almost altogether if not quite neglected. The "civic center" is certainly not one of the vital things that a city plan should properly aim to accomplish. "Community centralization" would be a more fitting term, implying centering of civic thought in a union with a thoroughly compacted and correlated civic physical body as a whole. At any rate, the old idea of a "civic center" to the neglect or exclusion of the rest has been definitely abandoned as a basis for city planning.

In a Capital city, such a consideration may possibly be uppermost; but in a commercial city, in which category New Orleans is distinctly thrown, commercial pre-eminence and the means of its attainment and maintenance is the mandatory fundamental from which the problem of the city plan must start.—Building Review.

Oakland Architect Describes his War Experience "Somewhere in France"

CAPTAIN WALTER D. REED, architect, and member of the firm of Reed & Corlett of Oakland, and who is serving on General Pershing's staff "Somewhere in France," has written a number of interesting letters to his California relatives and friends and the following extracts from epistles to Mrs. Reed will be read with interest by his professional brethren:

LETTER NO. 1.

I am finally in beautiful France, and it is wonderful here after leaving England. I have been over here three days now. I am not permitted to date my letters for fear that they fall into enemy hands and through knowledge of dates, information of movements of troops, etc., might be obtained. But if I say that it will be six weeks exactly until my birthday no one but yourself will know the date. I will call this letter No. 1 and when I write other letters from here I will number them and say — days from No. 1.

I have not caught up with any of your letters yet. We are here for a few days before going up to our headquarters when I expect to get a heap of mail from you. It is —— to be unable to get mail from home, when one knows there is some so near. We were just one month from home when we arrived here and one line from home would look like 1,000,000 francs.

We have had a few days to visit Paris and it is truly a wonderful city and the French are a wonderful people. It is inspiring to think of fighting to help preserve the integrity of such a people as the French.

I am rooming with Major Lott of Georgia who is on the same order with me. He graduated from West Point 10 years ago and resigned, but when the war broke out, he joined again. He is a very delightful fellow, about my age or perhaps a little younger. We have been together since leaving U. S. A. and we are both hoping that we will be stationed together over here.

We spent two days walking about Paris. We walked miles and miles and every mile discovered something more beautiful than the one before. Palaces, statues, monuments, parks, and drives—and then the French people—they also are wonderful, especially des femmes. There are so many in mourning and many crippled, but with it all they are cheerful and determined. There seems to be no distress in Paris. There is an abundance of everything to eat, and the Parisian certainly does know how to cook and to serve and to eat. Prices are not high. A very good dinner can be had for 5 f. ($1.00) about 8 courses. I am getting along a little with my French. I can usually make myself understood although it no doubt sounds funny to the French.

The shops here are magnificent and there are miles and miles of them, Fifth avenue after Fifth avenue.

Every resource of America will have to be thrown into the fight to bring it to a successful end. Every man in the U. S. A. will have to do his part in some way. Every resource of England and France is extended to the limit. They will be able to hold things until we get well started and then it is up to us and some job it is, too. Any man or woman in America, who thinks this is a remote proposition about which they are only distantly concerned is due for a sad awakening. Those who have made

sacrifices are not going to tolerate any indifference on the part of any of our people. If everyone gets into the game we can win, if not it means a compromise and then ten years of preparation for another big go with Germany, to which all of this will only be preliminary.

Remember me to Corlett and all our friends. I think of them all very often and wonder what the different ones are doing.

LETTER NO. 2.

This is No. 2 from France and three days since No. 1. This letter goes with the military mail. I censor it myself, but there are certain rules for letter writing and I do not wish to violate them.

I have my order today, which takes me up to the British front and I leave here in the morning. (You can probably guess where "here" is). I will be stationed there with a British Division as an observer for one month, then I go to the place where the school is to be held.

I will have a fine opportunity to see just how everything is done. My mail will be addressed as usual and I have hopes, in a few days, of having my mail sent up to me. I have not received any yet. The weather yesterday and today is just like a California winter's day. Rain and not very cold. The first three days here were quite cold and there was quite a bit of snow. It feels today as if the winter were over but of course it is not. It will be considerably colder up where I am going, but it is not nearly so bad as described before I came over here.

There is not much to say because one is so restricted in what one can say. I can say this, however, everything is going according to plans and we are going to have a wonderful army over here. Whether we can finish the job this spring and summer is a grave question, but one more year will surely finish the job.

I am in the very best of health physically and mentally. If I could just hear that you all were O. K.

LETTER NO. 3.

With 16th Division (Irish),
British Expeditionary Forces.

Still out here in the desolated front as I wrote you in my last letter. It is all very terrible when you look about, but it is also wonderfully interesting from a military point of view, and I have so many things to investigate and to make notes of that I rarely think now about the sad phases of the situation.

The dreadful desolation and suffering that one sees all about only makes one more determined to "carry on" as the British say. They are all very anxious to know when we are going to have that big army of ours over here. They are "done in" as they say, or "fed up with it." It is not surprising that they sometimes get tired of it all. They have been at this for nearly four years now.

They are a game lot and while they growl some, they have no notion of letting down. They have been delightful with me. I am well fed, bedded, horsed, motored, but not any too well washed. Bathing accommodations are none too good; I manage, however, with a basin and hot water. I haven't caught any thing yet.

We all wear tin hats and gas respirators. I am permitted to go where I please, provided an officer goes along to keep me out of dangerous areas. Our headquarters are well back and quite safe.

You can look out anytime and see the "Archies" as they call their

anti-airplane guns shooting at the aeroplanes and the aeroplanes fighting one another. It is surely great sport.

Last night they took me down to the Divisional theater and we saw a bully show. Some of the female impersonators were very clever. It was a sort of vaudeville show and I enjoyed it thoroughly. About 1,000 men and officers were there. It was easy to forget everything and imagine that we were back in town again. It is a wonderful thing for the men just out of the trenches. God knows the poor devils need something to make them forget.

I visited the U. S. A. R. R. engineers here. I did not know any of them personally, but find them a fine lot. They are the 12th Regiment from the Middle West.

They have built and are operating the narrow gauge railroads up along the front, and they have the operation and maintenance of all railroads in this sector. The British think they are wonderful and they are doing splendid work. I felt very proud of them.

I have also met two young American doctors, attached to this division. They are also making good. I am taking up a different branch of work at one time and when I have completed that, the Commanding General turns me over to another branch. It is intensely interesting and I am quite busy asking questions, taking notes, reading reports and studying maps.

I am able to sleep now in spite of the big guns. They are scattered around here pretty thick and when they go they shake things up mightily, but as I said before, I have learned to sleep in spite of them, although they do wake me up for the moment sometimes until I realize where I am. Then I go to sleep again.

I think I have gained about five pounds since I left home. My blouses are all too tight. For the last two days the weather has been beautiful, like California in the spring. The buds on the trees are ready to burst. Of course it is fearfully muddy underfoot, but the cold has gone and conditions are improving every day.

Mud will never bother me again. I have learned to go right through it. There is no use trying to go round it as it is all muddy. I have to change two or three times a day when I am around headquarters. When I am not here, I go all day with muddy boots. I have a servant who is very handy at cleaning boots, so that it is not much bother after all.

They have lots of queer expressions and I am writing them down, so that I will not forget them.

I had to stop writing this last night and go to dinner and after dinner it was too cold in my room for writing so I will finish now and get this into the "post." They put a stove into my room today so that I am very comfortable. Today is Sunday but one would hardly know it. Everything is going along as usual. I was up within 200 yards of the Bosch line today. It is perfectly safe in the trenches if one doesn't stick up one's head. It has been very foggy today and we could not see him and of course he could not see us. I have been here ten days now and the time goes very fast. I have been with the Royal Engineers all day today and yesterday. They are fine fellows but I have not seen any outfit that can touch the 115th Engineers.

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Some Do, and Some Don't

"I suppose that most people want their building material on time," said the Sweet Young Thing.

"Well, not all of them," replied the Dealer. "A few pay cash."—Ex.

How Concrete Can Be Made Waterproof

MANY methods and ingredients have been devised for making concrete completely waterproof. In many kinds of stucco work and in concrete that need not be impervious to ordinary dampness some of these are applied to walls after they are finished. In others the waterproofing is made a part of the concrete mixture, this latter being known among masons as the integral process. About two per cent of the materials used in integral waterproofing is customarily added.

The purpose of the integral addition is to supply a filler even finer than the cement which shall close the most minute parts left between the sand grains and the cement. Alum and lime are sometimes used, as are diluted soap and emulsions of oil. Soap in the water, with which cement is mixed, and alum in the concrete mixture, are supposed to act chemically upon each other and produce a totally non-porous substance. There are many integral compounds, manufactured under trade names, most of which are relied upon by masons for ordinary work.

But for cisterns, retaining walls that must withstand long and steady soaking, and floors subjected to frequent floodings no process has been found as efficacious as the application of waterproofing on the side that is subjected to the water. Of these the most satisfactory and the cheapest, where the character of the work permits of its use, is asphaltum, either as a dissolved paint or heated and applied while liquid. This may be applied with a brush, allowed to soak in, and repeated coats added till the workman is sure every pore is closed.

Another process depends upon paraffin to close all pores against moisture. The application of paraffin is a more complicated and expensive process and is not considered more effective than the asphaltum coating. It has the advantage, however, that it may be applied to stucco or other exposed surfaces without marring their appearance, and paraffin-finished walls may be painted any color desired with specially prepared paints.

In applying paraffin the surface to be covered is gone over with a gasoline torch and heated, a small area at a time, and the paraffin at high temperature blown on in a spray. The heated wall draws the liquid paraffin into every pore, and when the work is finished the surface is covered with a film of wax. Paraffin is sometimes dissolved in benzine or some other solvent and applied like paint. When this method is used several coats must be applied, each being allowed ample time to dry out.

The chemical affinity of soap and alum is the basis for another waterproofing method. Soap, preferably an olive oil or castile soap, is dissolved in hot water at the rate of four pounds to five gallons. Ten ounces of alum is dissolved in five gallons of water in another vessel. First the soapy water, at a temperature as near boiling as can be maintained, is brushed over the wall, and it should be brushed in till a smooth, unbroken surface is secured. After the soap has thoroughly dried, in from one to two days, a coating of the alum water is applied and allowed to dry. Another coat of soap and a second coat of alum finishes the job. In a short time it will be found that chemical action has amalgamated the soap and alum into a coating that thoroughly withstands water.

It will readily be seen that these processes are expensive, even the asphaltum costing from forty to fifty cents a square yard. Hence, the builder will do well to see that his concrete is made rich enough with cement and is sufficiently firm, so that his wall will require no further waterproofing.

Many workers in cement, particularly plasterers putting up stucco or applying finishing coats to concrete walls, use lime in their plaster. An addition of lime makes the mortar more smooth and putty-like and much easier to handle, straight cement mortar being short and inclined to be crumbly. The best authorities agree that a small admixture of well-seasoned hydrated lime does not harm cement mortar if it is thoroughly incorporated. But the danger in ordinary practice is that the lime will be allowed to run through the mortar in lumps. A lump of lime, even though it be no larger than a pinhead, will absorb water, while the surrounding cement remains dry.

* * *

Women as Architects

THE great war has opened up new means of employment for the women of the future. The latest is architecture, and on October 1st the Architectural Association, of which the King is patron, opened its school for the first time to women students. The Association, constituted in 1847, is the recognized educational body for the study of architecture in its varying branches, and the opening of its doors in new offices recently acquired at 34 and 35, Bedford street, London, W. C., should prove a matter of great interest to women as well as members of the architectural profession. The examinations of the Royal Institute of British Architects have been open to women and also the new degrees in architecture at the different universities, but the fullest educational facilities have not been available until now. It is not improbable, says the Times, that the scarcity of male students—there are only about twenty, compared with the usual 120—may have influenced the council's decision, though it is not given as the reason. The head master (Mr. Robert Atkinson, F. R. I. B. A.) stated recently that women would find a field for their abilities more particularly in decorative and domestic architecture rather than in planning buildings ten and twelve stories high. It was necessary for those who planned domestic architecture to know something of the social life of the prospective occupants of the buildings, and in this women would have certain advantages over the male architect. The school has special arrangements made for the accommodation of women students. The plans were made by the head master, and include a fine library, where the valuable collection of books will be housed, and three large studios. It is interesting to note that a cinema is part of the school equipment, being specially useful for demonstrating the points to be looked for when visits are paid to workplaces of different kinds.—Architect and Builder, Cape Town.

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And Then Couldn't Collect

Professor—"What is the first mention of a building material dealer in history?"

Student—"I don't know—but somebody put a lien on the tower of Pisa."—Building Age.

The Architect of Today Not Appreciated

By W. MARBURY SOMERVELL, Architect

IN ORDER to definitely determine the status of the architect today, be he of whatever nationality, it is necessary to run over briefly a history of the profession of Architecture, and, if fault be found with the position of the practitioner at the present time, perhaps an analysis of what has gone before may be of use in finding a solution out of the difficulties of the present.

The architect, as we first see him in history definitely defined, seems to have been so closely allied with the painter and sculptor that he appears to have been almost a composite sort of person. It may be that, given the simplicity of existence which obtained up to the Middle Ages, many of the architects of today would be equally as proficient in all things aesthetic, for certainly our art requires the highest development of the faculties of both painter and sculptor.

The age following the downfall of the Roman Empire, and leading up to the rise of the Gothic period, was essentially the age of craftsmen, and we see the architect, sometimes a monk, again a mason, but always a worker evolving new ideas, and striving with the best there was in him to express his inspiration in the materials at hand.

Later on, with the Renaissance, came a wonderful revival of spirit or interest in things beautiful, which produced the great architect-painter-sculptor group of Michael Angelo, Raphael, Bramante and others. These men, of wonderful talents, became pre-eminent in their arts spontaneously, but their rise was no doubt due in a measure to the fact that the Renaissance affected the whole of the people, and a discriminating public assisted materially in giving them recognition. In these times, with the complexities of life thrust upon us by advanced civilization, the inspiration which created the art of these men is denied most of us, but, in them, it shines forth in all of their efforts.

In the seventeenth century Architecture, as a profession, at first comes under our notice. At this time, aside from the specialist in Architecture, there arose a class of dilettanti men of means and antecedents, whose minds were bent on all the serious questions of the day; whose education was deemed incomplete unless they had acquired some smatterings of our art, and some of these men developed talent of no small order. It was this phenomenon which gives us the architectural ruminations of Sir Francis Bacon, which gave Sir John Evelyn so much material for that delightful picture of seventeenth century life contained in his diary. Thomas Jefferson, the founder of Democracy in the United States, is an exponent of this class, familiar to all of us who have traveled in Virginia. Gentleman, farmer, statesman and scholar, he designed several very noteworthy buildings in his time. The University of Virginia, the State Capitol at Richmond, Virginia, and his home, "Monticello," will equal many and exceed many more residences built in this day of ambition and opportunity.

Inigo James, Sir Christopher Wren and the other great lights of English Architecture, belong to this period, and were fortunate in being able to maintain their good works and position through a cultured patronage and the appreciation of a grateful public.

The latter part of the eighteenth and the early part of the nineteenth centuries mark what may be called the dark age of Architecture. This might be ascribed to many causes, but probably was the effect of a general unrest in the rearrangement of our entire civilization along industrial lines—to the various schisms which divided the ranks of the profession, and to the reaction from a phase of civilization in which men had been led to one where they

were beginning to think and act for themselves. However this may be, the profession of Architecture developed into a school of pedantry, of narrow views on style; and the introduction and use of new and unfamiliar materials added confusion to what was already an amorphous professional situation. The education of the architect, too, at this time did not tend to bring out what was best in men, and when a large building was to be built the information at hand regarding practical materials, to say nothing of the question of design, was most meager. Verily, he who in this period undertook an important commission was a brave man, and all honor should be shown him who at this time produced results more than commonplace. I remember very well hearing my old patron, James Remick, in New York, say that when he undertook St. Patrick's Cathedral of that city, in the 40s, there were only two books to be gotten on Gothic Architecture in the city, and these books, with what he had absorbed by a few years' travel in Europe, furnished all the data which he had at his command when he designed the cathedral. The result may be open to many criticisms now, but still the building is, considering its date, one of the most effective churches in America. If it be lacking in proper detail, compared with the prototypes which inspired its design, it nevertheless shows what few buildings show in these times—a vast amount of conscientious work and study.

The profession of Architecture at this time was taken up, both here and abroad, by men of means, and only those who possessed real talents, who loved their work, rose to the top; the others maintained only a nominal practice.

During the 60s, both in England and the United States, the development of the use of new materials, the consolidation of industries, with the consequent production of wealth, created a new demand for buildings, along new lines. Universal education, and the feeling of democracy, had been bringing to men of all classes an ambition never before witnessed en masse in the history of the world. Professions which had been practiced only as a genteel pastime, or an outlet for cultured dilettantism, now became peopled with earnest, hard-working men, and Architecture was the first to feel the stimulus given by its infusion of new blood. Courses of study in the universities became better organized, foreign travel was encouraged and a revival in interest in things aesthetic extended over the whole world.

For the first time in history, architects were not afraid nor felt ashamed to stand forth boldly to say: "I have been consecrated to a great profession and am willing to contribute what I know to the world in return for what recompense it will allow me. If my brother professional men, the physician, the lawyer and the clergymen, can accept a living for their work, why should I be too modest to accept a competence as my return?"

Since this spirit first had its birth, great changes for the betterment of mankind have taken place. Cities have been called upon to rearrange their plans—congestion of traffic had to be relieved—hygienic buildings had to be evolved to meet the demands of a more mature understanding of nature's laws. In each case the architect has met the situation and found the solution as it applied to his art boldly and directly. Yet what today is his recognition by the public which has so benefited for centuries from his unselfish zeal and poorly repaid efforts?

Among architects and cultured laymen alike it has long been a subject of regret that Architecture, of all the arts, is the least appreciated. There is no profession which requires of a man so much talent and so laborious apprenticeship; none which requires so costly and conscientious training. No lawyer or physician is called upon to handle affairs more important to the public wel-

fare than is the architect—yet, in view of what he does, none is so poorly paid or esteemed as he is.

I found a newspaper clipping from one of the great daily papers not long ago which dealt to some length with the oblivion on the part of the public to the profession of Architecture and its lack of recognition of our efforts. It is a reassuring sign that a prominent New York newspaper should give such a matter more than a passing thought, to say nothing of its having actually found space to say something in our behalf.

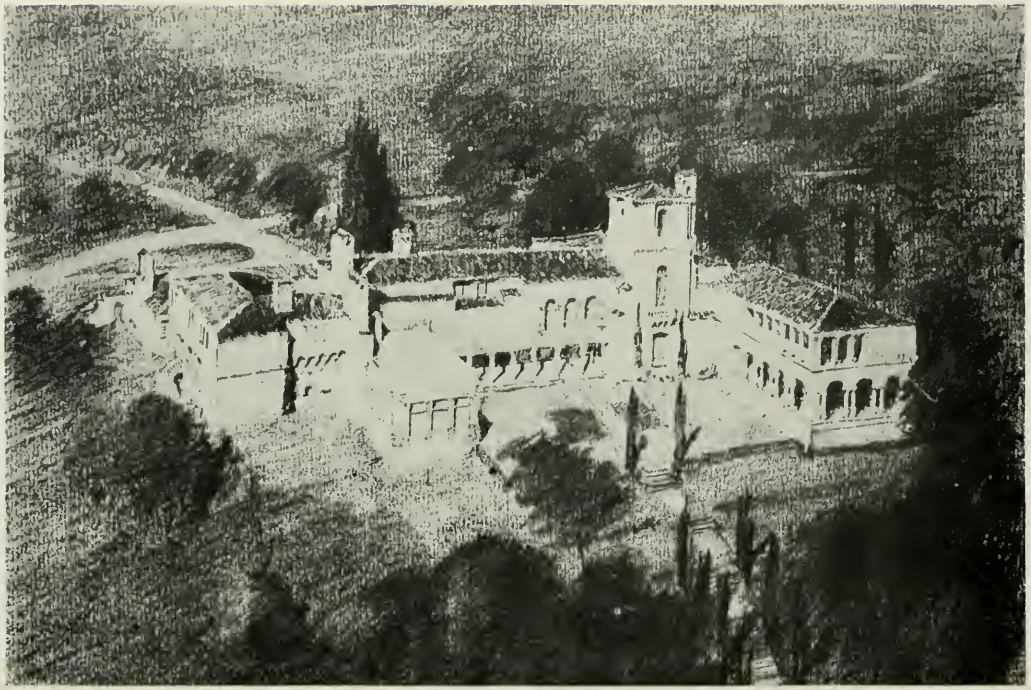
There can be no doubt that a reason must exist, for, first, the manufacturers have not arrived at a point of the apathy of the public. There must be something to be said on their side, or surely this subject would not come up for discussion. When we consider that the public are poorly informed as to our work and efforts—when we realize that we are looked upon as only a necessary evil in most cases—when we think of the many poorly trained and inadequately equipped men who are practising in the name of Art—is there any wonder that we are often misunderstood? The worst feature, too, is that, like other callings, the best suffer always on account of the shortcomings of the worst—and the whole is often judged by the standard maintained by the lowest of our calling.

To overcome their prejudices we must first of all educate the public as to our importance to them and to the civilization of the times. We must be business-like in meeting our obligations, and must always bear in mind that we are, in a manner, the custodians of large amounts of money. On our decision and our conscientiousness in administering this trust depend great losses or gains to our clients; and if we by carelessness or ignorance fail to render honest and impartial service we will not alone suffer in our own reputations, but will bring into discredit all of our brother practitioners.

In all things we must guard against losing sight of the fact that, no matter how business-like and practical we choose to be, we are essentially artists. Our profession is an old and honored one. We must not, in the feverish haste of modern methods, allow our lamp to be dimmed, difficult as it is to keep alight. To him who has enthusiasm, the work, the study, the care in cherishing the highest professional ideals, should be a joy, and one needing no further reward. If the world crown us with laurels or shower good fortune upon us for our efforts, let us accept them with a dignity and modesty worthy of our profession; and if we pass out unknown or unrecognized, let it be at any rate in the knowledge that we have performed our task to the best of our ability. Our example, too, is not without some responsibility. Who knows what budding "Phidias" may be inspired to consecrated effort by witnessing our struggles for higher ideals? We not alone have the task of keeping our lamp alight, but are burdened with the responsibility of seeing that it is passed on to worthy hands in the next generation.

The ancient Greeks, you will remember, had a game, the Lampadephoria, where runners took torches lighted at the altars of Prometheus, Athena and Hephæstus and passed them from hand to hand until the winning post was reached.

Thus it is for us to so train ourselves that when the torch passes into the hands of the coming generation it may be fanned into more vigorous life and shine again with all the splendor and brilliancy of the great ages of Architecture.



COUNTRY HOUSE OF MR. JAS. D. BLANEY, NEAR SARATOGA, CALIFORNIA
WILLIS POLK & COMPANY, ARCHITECTS

Annual Exhibition of San Francisco Art Association

By IRVING F. MORROW, Architect.

SINCE the San Francisco Art Association, in its current exhibition, has been gracious enough to recognize Architecture among the Arts, it may be well to return the courtesy by noticing the exhibition in its entirety.

In a foreword to the catalogue Mr. J. Nilsen Laurvik rapidly reviews the recent past, appraises the present, and takes a side glance at the future, of California art. Mr. Laurvik writes with a facile pen, and expresses a confident but reserved optimism; read before seeing the exhibit, his introduction raises expectations which prove over-sanguine.

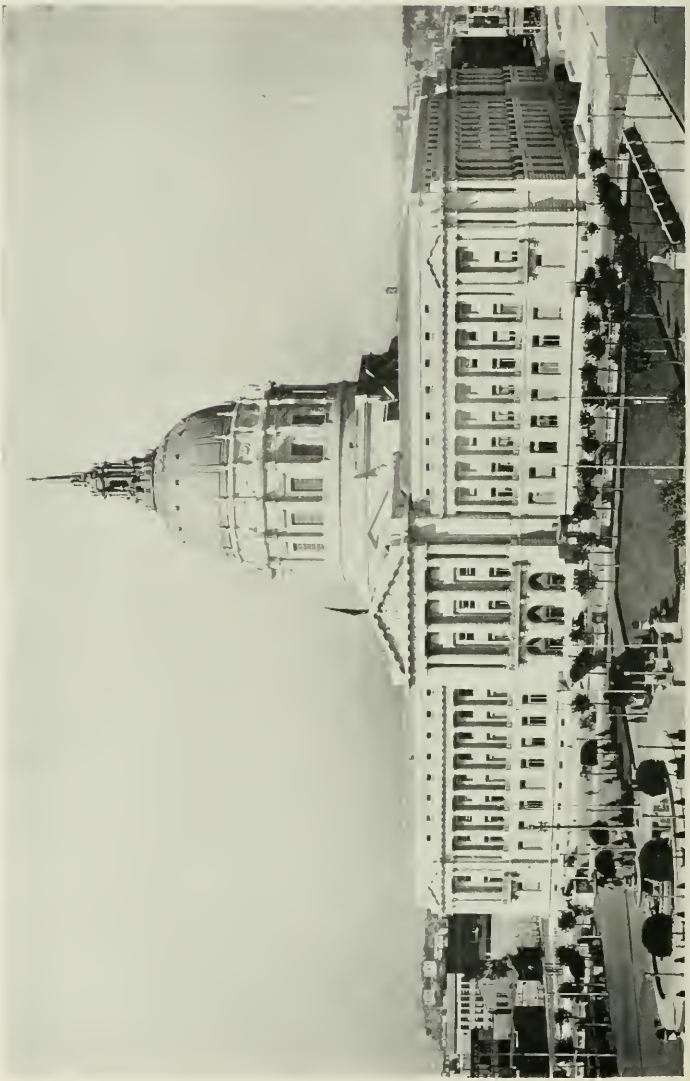
It is true, as Mr. Laurvik points out, that the second-hand sentimental romanticism of the old school is conspicuous by its absence, and that it has been supplanted by a less complacent choice of subject matter and a more robust handling. It is not so obvious that the newer note is more personal or more representatively Californian. To one who has followed the trend of painting during recent years, and seen a few exhibitions of the independents, there is not even the excitement of novelty in blotchy landscapes, portraits exaggerated into indifferent caricature, bird's-eye inventories of toy-like objects, and figures lolling in languid disgust at their own unloveliness. If these things seem more unconventional it is only because they are less familiar; they are, with most artists, but the exchange of a discredited convention for a new one equally barren and equally binding. The truth is that without a personal vision a painter is as helpless in the grip of one convention as another; and of all those who use paint, the majority, unfortunately, fail to see with their own eyes and to think with their own minds. The new convention, if I may be allowed to so style it, undoubtedly is a greater incentive to an ostentatious denial of restraint than the one outworn; on the side of pure beauty it certainly condones, if it does not enjoin, ideals much more lax.

In fact, on casual examination, crudity is the dominant impression of the present exhibition. Composition is but a fortuitous excerption from unlimited panorama; color is either raw or dingy; where the crudity of the treatment is not insisted upon, subjects are chosen from the cruder aspects of nature. It is unfortunate, however, that a few works of blatant character can leave a taste out of all proportion to their intrinsic importance. A more careful inspection is rewarded by a reassuring amount of work of pleasurably subtle quality. Landscape work is on the whole the most commendable. We have been in sore need of painters who love and respect the California scene. Reading some time ago a Frenchman's record of travels in his own land, I was impressed by the frequency of such epithets as *doux* and *vénérable*, expressing sentiments so foreign to the spirit of analogous literature of our own. The reason that the French painter's portrayal of the French country has been so eminently more successful than our painter's portrayal of ours (omitting consideration of the disparity in development of the respective cultures), is not because the French landscape is essentially more paintable than our own, but because the French painter has always respected his country as sweet and venerable, while our painters have seemed secretly ashamed of the supposed uncouthness of a landscape which failed to conform

EDITOR'S NOTE.—Mr. Morrow has discreetly refrained from individual criticism, his review being confined entirely to generalities. The few illustrations accompanying this article adequately express the character of the architectural work exhibited. Two views of the Blaney house by Willis Polk & Co. give the reader some idea of the character of this remarkable residence, which will, by the way, be illustrated in detail in the May number of The Architect and Engineer.

HOUSE OF MR. J. D. BLANEY, NEAR SARATOGA
WILLIS POLK & COMPANY, ARCHITECTS

SAN FRANCISCO CITY HALL, END PAVILION OF SIDE FACADE
BAKEWELL & BROWN, ARCHITECTS



SAN FRANCISCO CITY HALL.
BAKEWELL & BROWN, ARCHITECTS

to the prescriptions of an irrelevant formula. We want painters who will sit amid their native surroundings exulting that they are here rather than secretly regretting that they are not somewhere else, and renouncing all irrelevant tricks of technique, however sensational or clever. Several landscapists show work revealing a sympathetic observation which raises hope that this want may be filled. The portraiture is on the whole lacking in distinction. The portrait painter's problem is still the divining and the revealing of character; when his interest passes from the sitter to the objects around him or to the air before him the result is still life. Real still life, water color, and particularly the graphic arts, are creditably represented. The sculpture exhibit is small, but not without interest. The exhibition is hung with general good taste, and with a commendable lack of skying and crowding.

The hanging of the architectural section presents a specious attractiveness; the walls are uncrowded and of pleasant decorative effect; upon examination, however, the arrangement proves entirely unsatisfactory. In an architectural exhibition the wide separation of different exhibits of the same subject is unpardonable. Any understanding of a project becomes impracticable if not impossible. Illustrations which are mutually informing when correlated may be wholly lacking in interest if isolated. This is often so in the comparison of pre-construction perspectives and photographs of a completed building; it is particularly true in the case of plans, which, despite a prevalent "school" superstition, are generally architecturally futile when unaccompanied by related drawings or by photographs. The deliberate statement of truths so obvious might appear pedantic were it not that they have frequently of late been ignored, and that the present exhibition is a particularly flagrant example of the offense.

As to material presented, the exhibition is respectable but not in any large sense distinguished. It is confined to San Francisco architects, and even within this limitation is not entirely representative. Most of the work is familiar, a circumstance which is in no way derogatory, but which fails to add to the interest of the exhibit, especially when a comparatively small proportion of it is really notable. Mr. Laurvik rightly calls attention to the importance of the re-inclusion of architecture among the arts where it belongs, and where, one might add, it should hold a dominating, or at least a coordinating position. It can not be said that the response is adequate to the occasion.

April 10, 1918.

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An Inexpensive Sun Parlor

A very inexpensive sun parlor has been recently added to a suburban home by enclosing with glass a small second-story bedroom porch, the only furnishings of which are a cot, a small drop-leaf kitchen table and one comfortable willow armchair, says Virginia Earle in the Philadelphia Public Ledger. If there is any porch already a part of your home, all or part of which can be enclosed with glass for use in winter months, or if you can possibly afford to build out from some room, in the event that you have no porch, a really-truly sun parlor, you are robbing yourself and your family of one of the greatest delights of a home if you fail so to do. If you are planning to build a home and omit from your scheme some kind of a sun parlor or glass-enclosed porch, that is truly a sin.

Lower Hardware Prices Not Probable

"THE situation in the hardware market," said one authority in the trade, "is such that I do not see any possibility of lower prices for a very considerable time. The costs of doing business are mounting from day to day. Labor is not only scarce and hard to get, but is increasingly independent in its attitude and constantly making demands for more money and shorter hours. Also, what we call the labor turnover in the course of the last ten months has been tremendous. I know of one manufacturer who, in order to keep 3000 men constantly in his factory, had to employ during that time upward of 10,000. This is due to the general conditions in every industry. Factory help is constantly hearing of better jobs or more congenial work in some other line of endeavor. They leave their old jobs for others, and their places must be filled by new and usually inexperienced men. These in turn go through the same process, and the result is an ever-changing personnel in the factory force.

"This not only curtails production to an alarming extent, because of the men being more or less unfamiliar with the work, but is costly in actual money. In the case of a new man, we cannot put him on piece work. He could not earn enough at first to keep his family going, or to be attracted to our industry. We must employ him by the day until he has attained sufficient skill to be able to earn more by piece work. That may take anywhere from two to four weeks, or even longer; during which time we must pay him out of all proportion to the amount or the quality of the work he turns out. With 10,000 such cases in the short space of ten months, and with increased wages to organized labor, manufacturers' costs in their relation to the curtailed production per man makes a very bad showing.

"Another important factor illustrating the increased costs of doing business is the railroad situation. The average man looks upon a temporary freight embargo simply as a delay of a week or two, depending on the duration of the embargo. To the manufacturer it means infinitely more. It means to him the overflow of his warehouse, countless remarking and rehandling of cases, and sometimes, where the goods are urgently required by the customer, it means different routing or other expedients involving more clerical work and greater expense. It all results in duplication of effort, lost time, and wasted energy incompatible with economic management of business. It often takes five or six weeks to ship goods to points in the Middle West, where in normal times it took at the most ten days. These frequent delays often result in goods not being acceptable, or in a great portion of them being returned, which is more expense added to the general costs of manufacturing.

"But the railroads cannot be blamed for these delays. They are up against it no less than we are in the matter of help and as for many other things their situation is a good deal worse. The loading of cars to their maximum capacity, which was requested in view of the car shortage, has increased the number of cars laid up for repairs. With the labor scarcity they cannot get the men necessary to make the required repairs on these cars, and their finances are such that they cannot buy new ones to an extent comparable with the demands. All these things work toward the disorganization of customary practices, which always is accompanied by additional expense.

"The copper shortage is, perhaps, the most serious condition with which the hardware trade is confronted just now. Though most manufacturers have their requirements contracted for, there is little possibility of their getting more than a percentage of the tonnage they have placed. There is

nothing to compel holders of coppers to sell at the price fixed by the Government, and jobbers who are fortunate enough to have some stocks on hand will probably get some active bidding for their holdings. Hardware manufacturers will have to get more copper to keep their factories running, and in order to get it the chances are they will have to pay well for it.

"The surest evidence that there can be no very sudden or appreciable decline in prices of hardware is that there are no large reserve stocks of raw materials on hand. This applies to iron and steel of the various grades, no less than to copper and coal. Reserve stocks have been drawn on since the war started, until now there are practically none that amount to anything in existence. Large jobbers and warehouses are practically without supplies, and only small quantities of spot coal at heavy premiums can be obtained.

"What building has been going on has been mostly factories, and for these only the coarser grades of hardware are used. There has been a small market for export, but freight rates and the general disorganization of things in most foreign markets have been a deterrent to any extended building operations."

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French Architect's Polite Protest

ONLY the French architect knows the climatic conditions of their own country, the possibilities of light, and, more than all, the habits of living of the French peasants and town dwellers, who will instinctively shape their new life to the mold of the old. The French government, after considering the reconstruction problem for a long time, has instituted several competitions for young architects. Among the projects presented many have been worth while rewarding and retaining. These certainly could furnish inspiration for Americans who desire to help.

But forgive me if I say again that help will be most suitable if it is administrative instead of creative. It would be very sad, I cannot help but feel it, if we were to have in France an American village. We must have a new French village, though a modern one, if you like. The French architect knows the French spirit. Americans and Frenchmen are both democrats, I know. But in our lives we are organically different. The American has a genius for organization. The French have other geniuses. With American organization, you can be of an immense help after the war, but I assure you, it will give the best results in collaboration. The combination of French taste and American practical support will be perfect.

This undoubtedly will stimulate our American confreres and encourage them in their turn to bend their efforts toward a common goal of artistic regeneration. America is a young country, generous and sincere. Between us we could—France and America—bring about a renaissance of the arts, improving tastes and elevating ideals.—Henri Caro-Delvaille in New York Evening Post.

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Designing Joint County Tubercular Hospital

Mr. R. A. Herold and Mr. J. E. Stanton, associate, Forum Building, Sacramento, have been commissioned to prepare plans for a joint Tuberculosis Hospital for eleven counties at Weimar, Placer County, at a total expenditure of $150,000. The plans will be ready for bids by July 1st.

Real Estate Men and City Planning

By CHARLES MULFORD ROBINSON.

REAL ESTATE men and the city planner by curious circumstances have recently discovered one another. The fault has been with the city planner, who was conceited in his youth, arrogant, a bit visionary, and infatuated in his early days by mere beauty. He took architecture by one hand and landscape architecture by the other, and never noticed the home-making realty interests that had been on the ground, and in more sense than one for a long time doing the real work of city planning.

I am glad that at last they have discovered each other. If I can hasten the match by pleading the city planning cause through taking up the economic argument, I shall be glad to do so. That argument is not romantic, but it is strong. From such practical people as the real estate interests it demands consideration.

There are, it seems to me, four economic reasons why the real estate interests should look with favor on city planning.

The first economic argument is the general one: that whatever is of economic benefit to the community as a whole, as city planning claims to be, is advantageous to the realty interests, for they make up an important part of the community. In addition, realty interests can prosper professionally only as the community prospers.

The benefits which arise to the community from city planning are of various origin. For the present it is enough to say that one of the proud claims of the operation is that it represents preparedness, preventing loss by the use of foresight, insuring against waste of tearing down—or of "running" down—by the completeness of the civic adaptation to purpose which it provides. Undoubtedly it does, in at least a considerable measure, have this effect. In so far as it does, it means a gain to the community, and directly to the realty interests.

The second economic argument is special—by which I mean that it has most concern with the real estate point of view. To see how far this is true, we must ask ourselves just what in particular city planning does, by way of exercising foresight.

Primarily, then, city planning designates what use shall be made of the various parts of a town. It does this in a very thorough fashion. It not only says this area shall be a park; that shall be the civic center; here must be located the stores and offices; there the factories and that the homes over yonder shall be safeguarded from the intrusion of inharmonious factors; but it determines the use to be made of different streets. This street, the city planner says, shall be a main traffic artery, suitable for business and for street car lines, and made wide in consequence; that one, set apart for residence, shall all its life be quiet, restful and beautiful.

Now what does this mean to the real estate business? It means this: The status of even cheap real estate is changed from a speculation to a gilt-edged investment. That means a higher general average price and more stability. The agent can truthfully state what he is selling. It is like buying a guaranteed stock, only now the city is the guarantor. The chances of loss are reduced through this operation, by eliminating the opportunities for unexpected changes. A man who puts his savings into a home with lawn in front is certain that a factory will not go up next door, that no grocery store will stick its red nose out to the sidewalk line, that

no high building will shut off his light and rob him of air and sun and stars.

The merchant who risks his fortune in the purchase of a store has assurance that business will not be lured suddenly into an adjoining street. Or, if you buy a tract on the outskirts of the city, with the idea of subdividing, there is no danger that the next tract will be built over in a way that will destroy or greatly reduce the value of your tract; no possibility that you will be put in a pocket, unable to get into or out of your tract—as recently did happen to a man in Detroit.

A third direction in which the real estate man, whether owner or operator, is helped by city planning is in the reduction of the cost of tract development. Under city planning, since it becomes possible to foresee the use which is to be made of a street, we can build the street in accordance with its needs. All engineering features—as the size of sewers, the strength and width of pavements—can be adapted to actual needs, without the necessity of providing an extra capacity which is attuned to the roseate hopes of visionary optimists.

The cost of tract development is reduced in another way: It becomes possible, on the minor streets, at least—and they make up much the larger number of all which real estate men lay out—to follow the topography. This adds greatly to the beauty and picturesqueness of the street; it does away, in large measures, with expensive cuts and fills; and it preserves the value and salability of the abutting lots, through keeping them near street grade. Finally, not only is the cost of tract development reduced, but there will come a reduction also in the cost of maintenance. On all except main traffic arteries there will be less pavement, not merely to construct but to keep in repair and to clean. Take, for instance, simply the matter of sprinkling. If a cart waters satisfactorily a pavement 24 feet wide, the making of a pavement one-half, or possibly only one-quarter, as wide again may mean the doubling of expense, because the cart must take two trips instead of one.

Do not think that wise real estate operators can secure all of these results as well without city planning as with it. In isolated cases they have doubtless done so—when owning or controlling very large tracts. And even then with peril, owing to the uncertainty as to what may be done on adjoining developments. But irresponsible developing, in which everyone does as he pleases with his own tract, and in which each tract is treated as a separate unity without centralized control or general plan, is too fraught with public danger to be a condition which our cities can suffer to continue. The day for that is very swiftly passing—in most cities has already passed. There remains a fourth consideration, which has sufficient importance to justify real estate interests in welcoming city planning eagerly as friend and "steady."

This is the fact that city planning must promote the salability of lots. People will be more ready to buy. There are several reasons for this belief. The fact that the permanent character of a lot's environment is practically assured—guaranteed by the city plan—to such extent that the element of risk on the purchaser's part is almost eliminated, will make people less hesitant to buy and to build. All lots have the advantages which now appertain to those in restricted neighborhoods, with the added merit that the restriction will not be short term and will really bind. The fact that the cost of development will be reduced will make it possible to sell lots at lower prices, without reduction of the seller's profit—indeed, to its enhancement, by thus affording him a quicker turnover. The reduction

in the cost of maintenance, by diminishing taxes, will lower carrying charges, and so again add invitation to the purchaser. The greater attractiveness of homey, cosy streets, that follow contours picturesquely, that seek out and preserve fine views, that save great shade trees instead of slashing through them; the elimination of inaccessible lots, perched high above the street or at the foot of precipices below it, all these are factors making for readier sales. So, also, and powerfully, are the improvements in transportation facilities, shortening time and distance, with the result from a city plan; and the prevention of overcrowding in the built-up portion of the town. Through these means sales are sure to be facilitated because of the resulting increase in the number of prospective purchasers. Let us, then, remember this: The real city planner is interested not in designing theoretically a city through the use of T-square and French curve, but in practically and sanely fitting a city to the needs of those who live in it. He tries to make the city more livable, as well as an easier place in which to do work efficiently.

In so far as he succeeds, in either or both of these ideals, he is the real estate man's best ally and best friend.—National Real Estate Journal.

* * *

Concrete Roads

I sit me down to write an ode about the great ideal road. In these uplifting, modern days we've found the punk thing never pays. The coin we've wasted making roads which wouldn't stand beneath our loads! That coin would buy us battleships till all the navies we'd eclipse. That silver coin, if stacked on end, would reach the good old moon, my friend.

We made our dizzy thoroughfares, and then were busy with repairs; the more we fixed the dadblamed things, the more they needed help, by jings. But now there's no excuse for such, for wasting wealth to beat the Dutch. The concrete road has shown its worth; it is the greatest thing on earth. It solves a hundred problems that once jarred the thought works in your hat.

Its cost is low—and that's worth while, since saving money is the style; and when it's built it's built to stay—it will not blow or wash away. It's pleasant, sure, to have a pike on which to travel when you like, nor find it wound around a hedge, nor buckled up, nor stood on edge. The concrete road is always there, and seldom clamors for repair, and all the scientists agree as to its durability.

Its surface smooth, you haul a load you couldn't on another road, and every parasang you go, you're saving time, and likewise dough.

Good roads! You hear that slogan sound wherever you may jaunt around. Go east or west, or north or south, you'll hear that cry from every mouth. For now the people have grown wise, and thoroughly they realize for better roads we all must yell, if we'd reduce the H. C. L. It needs no diagrams to show that better roads make prices low; consumers save a yen or more, on things delivered at their door.

Since for good roads we make behest, and since the concrete roads are best, the argument is at an end; we must have concrete roads, my friend.—Walt Mason.

The Architect and the Interior Decorator*

(A Discussion of Trade Ethics.)

1. At what point in a building does architecture cease and interior decoration, so-called, begin?

2. What is a decorator? Is he a professional man or a merchant? Should he be himself a trained designer, or may he merely be an employer of talent?

3. Can the decorator work successfully as a professional, his only remuneration being a fixed commission paid to him by the client, not by the dealers from whom he buys?

4. Can a dealer in merchandise (not a broker), with goods to sell, assume to act in a professional capacity, without suspicion of self-interest?

5. Can large organizations, with salesmen as the medium of communication between client and architect, work sympathetically with the architect?

6. Is the decorator willing to declare himself definitely as to whether he is a professional man, a merchant, a dealer, a broker or an assembler? If he wishes to be regarded as a professional man, is he willing to establish a code of professional ethics regulating his relations with other decorators and with architects and live up to that code?

(Explanatory Note: An architect will not enter upon a piece of work, upon which another architect is employed, at the instance of his client without the permission of the first architect; or until the first architect is dismissed and paid for his work. If the decorator wishes to be considered, at least in part, professional, should he solicit a client without the sanction of the architect? Should he try to get the interior work away from the architect? Is not this practice the cause of much ill feeling between the architect and the decorator and is this practice proper? If this practice is justified on the ground of self-preservation, does it not remove decorators from the professional class and reduce the art to a mere business?)

7. Should the architect refrain from buying and selling, even where he secures discount for his client and receives solely his professional commission?

Is such buying and selling unethical?

What is the ground for the objection of the decorator to an architect's buying from wholesalers and charging a client merely his professional fee for the service rendered? (There is a great confusion in the minds of dealers and manufacturers on account of this practice and they are looking to the architect and decorator to settle this question.)

8. If an architect employs a decorator as one of his staff (some one who carries on his decorative work commercially, and wholesale dealers bill direct to this person, assuming him to be in the trade), is this a subterfuge and a questionable practice?

* * *

Expansion Joints in Concrete Swimming Pools

A free use of expansion joints was the feature in the construction of two reinforced concrete swimming pools in Columbus Park, Chicago. Both pools are of irregular circular outline with the sides laid out on segmental arcs and tangents. One has an area of 28,420 square feet, and the

*A series of questions which interior decorators and architects are invited to answer through the medium of this magazine.

other an area of 7280 square feet, and both are built partly in excavation.

The side walls, which are from 6 to 12 feet in height, are 16 inches thick at the top and 3 to 3½ feet thick at the bottom. They were constructed in 60-foot sections with expansion joints between the sections made with tapered form keys removed after the concrete had set. These joints were made water tight with crimped sheets of copper imbedded in both sides and with four-ply tar paper packings between the overlapping spaces of the concrete.

The bottom of the pools were poured in 30-foot transverse sections separated by 1-inch expansion joints and 2-inch expansion joints around the outside, the lower part of the joints being filled with oakum and the upper part with tar. The concrete was a 1-3-5 mix and this was covered with a 1-inch face of 1-1 mortar. The contract price for the pools was $16,691.

* * *

Watertight Basement Construction

IT is not generally known by many builders that the watertightness of concrete construction depends entirely upon the observance of good concrete practices, says H. Colin Campbell in the Bulletin of the Philadelphia Master Builders' Exchange. Watertightness is closely related to density and both are secured by so proportioning the various materials of which concrete is composed as to eliminate the voids or air spaces in the fine and coarse aggregates. For the greatest refinements of void elimination, rather elaborate tests are necessary, so that it may be known with exactness the volume of sand required to reduce the voids in the pebbles or broken stone to the lowest possible limit.

Another determination will disclose the quantity of cement necessary to practically eliminate these voids. As a matter of fact, such refinements are not practiced in actual field operations except where the work is on a large scale and the saving in cement would warrant such extreme refinement. Rather, it is the practice to use arbitrary mixtures which have been proved by experience to produce desired results.

The theory of proportioning concrete requires that every particle of sand shall be covered by a film of the cement-water mixture and that every pebble or particle of broken stone shall be completely surrounded by the sand-cement mortar. To insure this it is necessary to slightly overfill voids. For instance, a 1:2:3 mixture is an example of proportions that insure this overfilling.

This is an extremely reliable mixture to use where anything like a slight head of water is to be opposed—such, for instance, as where, after protracted rainy spells, the normal ground water level would rise and for a time remain above the level of a basement floor. Of course, under such circumstances it is quite necessary that the concrete floor shall have been constructed with a view to also combating this condition, which implies sealed joints between floor and foundation walls and sealed joints between individual slabs of the floor, unless the floor is constructed as a monolith.

Leaks in cellars and basements are not always the result of porous concrete due to improper proportioning of materials, but are frequently the result of leakage through seams that mark the stopping points of various days' work. Unless suitable provisions are taken to prepare these places properly when concreting is resumed, there is sure to be a leak through the wall along such planes.

Another cause of leaky basements or cellar walls is due to improper consistency of the concrete and to improper placing of it. For most classes of construction the correct amount of water in a concrete mixture is that which

will make a concrete of quaky or jelly-like consistency. Such concrete when placed cannot be tamped because of the amount of water which it contains. Blows of the tamper will dislodge it; therefore it is placed by spading in the forms and in this way settled to utmost possible density.

Experience has proved that where sand is only moderately damp when combined with the other materials in a concrete mixture, the quaky or jelly-like consistency can usually be produced by using water in the proportion of one gallon to one cubic foot of concrete in place. This figure is not intended to represent a fixed rule, but rather an approximation of the amount required.

One of the greatest faults of much concrete field work is that contractors, merely to cheapen the cost of placing and otherwise facilitate operations, use a concrete containing too much water. The practice of spouting concrete into place has largely been responsible for this. Concrete mixtures that are too wet are as objectionable in some ways as those which are too dry. There is almost certain to be a separation between the coarse aggregates and the sand-cement mortar when placing, and such separation produces pebble pockets or spots in the construction that lack required density.

Even though concrete mixtures may have been proportioned so that the combined materials contain the lowest possible volume of air spaces or voids, and also represent a mixture rich enough for strength, the resulting concrete will not be watertight unless it was mixed to the right consistency and properly placed.

Too early form removal and exposing the concrete to hot sun and drying winds also tend to reduce its watertightness. The concrete is robbed of water necessary to the chemical transformation of the cement, so that one other means to watertightness, after all others have been observed, is to protect the concrete for several days by keeping it moist.

Mixing a small quantity of hydrated lime with the other materials used in a batch of concrete will increase its watertightness. From 5 to 10 per cent of hydrated lime has been used effectively in this manner. It is generally believed that not more than 10 per cent is safe, because of the possibility that the strength of the concrete will be affected.

* * *

Economic Combination of Concrete Frame and Wooden Floor

An old standard type of floor construction, still extensively used, consists of cast iron columns and steel girders on which rest the wooden joists supporting the flooring plank. The high cost of iron and steel naturally leads to the substitution of reinforced concrete in place of the cast iron and steel. Mr. L. J. Mensch, engineer and contractor, Chicago, is using concrete columns of the von Emperger type supporting concrete girders that carry wooden joists and floor. The concrete columns have a cast iron core and a reinforcement of spiral steel hooping. The cast iron core projects up through the floor about 2 feet into the next column above. The top of the concrete girder is level with the top of the timber floor joists which rest on the offset or wider part of the concrete girder. For warehouse construction and the like, this design is economic under present conditions.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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T. C. KIERULFF - - - *Legal Points*
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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION

(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. LIII. APRIL, 1918 No. 1.

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THE CONCRETE SHIP

In simple language and in words of one syllable, so that he who runs may read, or those that sit still may comprehend—a match will float, a tack will sink, hence the primitive wooden ship, thence the marvel of the iron ship—now the incomprehensible stone ship!

"The Faith"—a concrete ship—releases the wood and steel industries to more urgent uses, it is an omen and a token of world democracy greater than the submarine has been a menace—it is the Monitor vs. the Merrimac; it is history repeating itself—it is bad news for the Kaiser.

WILLIS POLK.

THE THIRD LIBERTY LOAN

We are in the midst of the third Liberty Loan campaign, which began April 6th and will end May 8th. Already the signs point to an oversubscription of the bonds, but this should not influence those who have not already made their purchase.

Let everybody put as much into this loan as he can afford. Then let everybody look about for a way to economize. Cut off a little expense here and a little more there. Shave down that item of personal expense, do away a little more with the cost of pleasures and luxuries; cut some, even, on the necessities. Close figuring will convince you that your first estimate of what you thought you could subscribe, was low. Double your subscription. Then you will have done your full duty.

Remember, by economizing to buy Liberty Loan bonds you are doing a double service to your country. Every dollar you save by avoiding unnecessary expenditures means a saving in national resources and energy. Every item you remove from the list of non-essentials adds a bit to American strength. A dollar saved here and a dollar there, put into Liberty Loan bonds, brings America closer to peace and nearer to victory.

PRACTICAL RECOGNITION FOR THE ARCHITECT

The time will come when the architect will sign his name to his finished work, even as the artist does his today, says Mr. H. A. Sullwood, an architect of St. Paul, Minn. Then his client will not go to any architect with demands for wide eaves or Doric porches; he will go to one who has developed a style or styles which permit of those things, or at least one who is in sympathy with his demands. An art connoisseur tells his friends he has chosen a Rembrandt. So this man will exhibit a pride in having a certain architect. Given a certain number of square feet of lumber, a fixed amount of stone or concrete, a fixed sum for labor, and so on down the line, a prospective builder will get a better house and a more artistic one by employing an architect than by not.

He must not hamper the architect, however, by insisting upon certain brick, or certain shingles, or certain other materials if he expects to get everything an architect has to give. The architect has spent years of schooling and apprenticeship so as to be capable of giving the correct artistic and constructive advice.

INDUSTRIAL HOUSING THROUGH FEDERAL AID

Congress has passed an all-important measure, which has been signed by the President, appropriating fifty million dollars to be expended or loaned for industrial housing purposes in communities where war-manufacturing activities are extensive and where housing shortage is most acute. This amount will be assimilated rapidly in the more important industrial centers, so local civic organizations should not place too much dependency upon the factor of immediately forthcoming Government financial aid to meet their housing problems. It must be realized, too, that any community is to benefit now and in the future through the provision of proper industrial housing. For that reason it would not be fair nor business like to expect the Government to bear the entire burden. As a matter of fact the Government will, in many cases, never assume this burden or any part of it. The ultimate benefit to the community in establishing a stable, well-housed working population is so great and of such value that every effort should be made to meet the housing shortage through local means. The issue should be faced and prompt steps taken to satisfy an immediate need.

Another fact to be considered is after-war decentralization. Extensive plans are already under way to render suburban and farm life more attractive to the workman. Farm and factory are to bid against each other for labor. Production is to be at its most highly developed stage and labor, now more than ever, is at once the servant and the master of production.

Noted Architect Lectures at U. of C.

Professor Victor Horta, director of the Royal School of Fine Arts of Brussels, Belgium, and the Charles Eliot Norton memorial lecturer for the Archaeological Institute of America, distinguished throughout the world as an architect, visited San Francisco early in the month and delighted a large audience at the University of California with a talk on "The Cathedrals and Civic Buildings of Belgium and Northern France," illustrating the lecture with stereopticon slides.

At the outbreak of the war, Professor Horta was in charge of the construction of the Great Central Railroad station at Brussels, of the general hospital of Brussels, and of the Museum of Fine Arts at Tournal. To take up this work he gave up his professorship at the University of Brussels, which position he had held for twenty years. He is a member of the Academie Royale de Belgique and a knight of the Order of Leopold. Traveling in America under the anspices of the Belgian government, he has lectured at the Massachusetts Institute of Technology, Harvard, Cornell, Johns Hopkins, and many other universities, and before many learned societies.

Country Lodge

Miss Grace Jewett, 1103 Pine street, San Francisco, has prepared plans for a country lodge to be built near Redwood City for Mrs. Mary E. Gaster, 639 Bush street, San Francisco. The lodge will contain, besides living quarters for the owner, an open-air rustic dance floor, roller skating rink, bowling, with adjoining shower baths, tennis courts, etc. There will also be a number of small cottages which will be rented to auto parties for the week end or longer. About $15,000 will be expended on the improvements.

Want School Architect

It was recommended by the Washington State Chapter of the American Institute of Architects, at a meeting held in Seattle recently, that the School Board appoint a school architect. This would be a step forward towards uniformity in school construction. At this meeting they also decided to participate in the "Own Your Home" campaign.

$20,000 Apartment House

Messrs. Falch & Knoll, Hearst building, San Francisco, have made plans for a three-story and basement frame and brick veneer apartment house to be built on Clay streest, between Franklin street and Van Ness avenue, San Francisco, for Mr. M. S. Show.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. George G. Fitzgerald, first lieutenant of engineers with the U. S. Army in France, and member of the Engineers and Architects' Association of Los Angeles, has written to President Osborne of the association expressing his appreciation of the action of the association in cancelling the dues of members who join the colors during the period of active service. Lieutenant Fitzgerald writes he is looking forward to receiving The Architect and Engineer and other architectural and engineering papers.

Mr. Clarence B. Lamont, one of the foremost engineers on the Pacific Coast, died at his Seattle home on Thursday afternoon, March 21, age forty years. The cause of his death was pneumonia. Mr. Lamont was identified with many of the industrial plants of the Northwest in an engineering capacity and was a prominent figure in the establishment of Seattle's shipbuilding industry during the last few years.

Messrs. John R. Nevins and Earl G. Park, architects, and engineers, have announced their association under the firm name of Nevins & Park, with offices at 1708 Hoge building, Seattle. Both members of this firm have been residents of Seattle for the past sixteen years, having been employed by Bebb & Gould.

Mr. A. Robson Sargent, a well-known landscape architect of New York and Boston, died suddenly at French Lick Springs, Ind., aged 41 years. Mr. Sargent was graduated from Harvard College in 1900 and traveled extensively in Europe and South America in connection with his work.

Cemetery Office Building

Mr. B. J. S. Cahill, Union Savings Bank building, Oakland, has prepared plans for a one-story reinforced concrete and granite office building to be erected at Cypress Lawn Cemetery at an approximate cost of $25,000.

Bank Building

Messrs. Train & Williams, 226 Exchange Bldg., Los Angeles, are preparing plans for a one-story bank building to be erected at Covina for the First National Bank of that city.

San Francisco's Liberty Tower

San Francisco's Liberty Tower at Market and Third streets was designed by Messrs. Ward & Blohme, architects. The tower is surmounted by a replica of the Liberty Bell, which contains a set of chimes automatically playing patriotic tunes.

The tower is six-sided and has inscribed upon each side the various slogans of the campaign. They also contain six dials numbered in millions to indicate the progress of the drive. The cross timber on top of the bell contains an inscription indicating the total quota for the district. On the lower battlements are posted soldiers and sailors on guard. There are two booths for the sale of Liberty Bonds in the base of the tower.

Commission for Richmond Architect

Mr. James T. Narbett of Richmond, who recently gave up the practice of his profession to become a captain in the U. S. Engineers Corps, has been appointed supervising architect of the new buildings to be constructed at Pinole by the Hercules Powder Co. The company recently petitioned the War Department to relieve Mr. Narbett of his duties in the Engineers Corps, that he might go to Pinole and take charge of the work there. The request was granted by Secretary of War Baker.

Architectural Club Announcement

Editor The Architect and Engineer:

The San Francisco Architectural Club begs to announce its intention to assist the architects and engineers in securing draftsmen during the present crisis, when the shortage of men has become a serious question.

Members of the profession desiring the services of a draftsman, will kindly communicate with the Secretary by letter, stating the qualifications and other details regarding the type of draftsman desired.

Whittier Church Building

Mr. Norman F. Marsh, 211 Broadway Central building, Los Angeles, has been selected as the architect for the new church to be erected at Whittier for the First Baptist congregation of that city. The building will cost from $25,000 to $30,000.

Warehouse and Apartments

Mr. C. A. Meussdorffer, Humboldt Bank building, San Francisco has taken figures for a two-story and basement reinforced concrete warehouse and bakery to be erected for Meads Co., Inc., on Stevenson street near Sixth. The building will cost $16,000.

The same architect has completed plans for a six-story and basement reinforced concrete apartment house to be erected on Sutter street near Taylor at a cost of $80,000. The building will contain twenty-nine apartments of two and three rooms each.

Has Much Bungalow Work

Miss Ida F. McCain, 218 Kearny street, San Francisco, has recently completed plans for two five-room bungalows with community drive to be built in Westwood Park, San Francisco, for Mr. J. F. Shaefer and Mr. S. J. Rovere. Miss McCain has also made plans for a one-story and aeroplane-deck residence of seven rooms in Westwood Park for Mr. John Frey and which will cost $6,000, also a one-story dwelling in Westwood Park, for Capt. C. V. Olsen to cost $5,500.

Residence Alterations

Mr. Earl Bertz, architect, with offices in the Foxcroft building, San Francisco, has completed plans and taken bids for alterations and construction of a private garage to the three-story frame dwelling at 1816 Broadway, San Francisco, the property of Dr. Hubert Allen. Mr. Bertz was formerly chief draftsman for Mr. Albert Farr and has been very successful since taking up the practice of architecture for himself.

New Pebble Beach Hotel

The Pacific Improvement Company, Crocker building, San Francisco, owners of the new Pebble Beach Hotel, to be erected at Pebble Beach, in Monterey county, from plans by Architect Lewis P. Hobart, will also be the contractors of the building, sub-letting the work and placing in charge a manager of construction. It is estimated the hotel will cost $90,000. Construction will be started at once.

Oakland Residence

Mr. Frederick Soderberg, Union Savings Bank building, Oakland, has prepared plans for a $5,000 residence to be built on Park boulevard, Oakland, for Mr. Louis Schaffer.

The same architect is completing plans for the new Emeryville school house, to cost $40,000. Bids will be advertised shortly.

Select Architects for Big Fresno Hotel

Messrs. August G. Headman and A. Lacy Worswick, Call-Post building, San Francisco, have been selected as the architects for the proposed new $500,000 hotel to be erected at Fourth and Tulare streets, Fresno, for a syndicate of capitalists headed by Fairfax Cosby, Sequoia Club, Fresno. The building will cover ground area, 273x150, and will be eight stories in height, with basement and subbasement. Construction will be Class "B," with reinforced concrete walls, floors and roof, and exterior of white cement and terra cotta There will be 332 rooms, 50 per cent of which will have private baths. Mechanical equipment will include three electric passenger elevators, steam heating plant, with oil-burners, ventilating plant, vacuum cleaning, hot water, and ice water in all guest rooms, tile in all bathrooms. In design the building will be not unlike the Hotel Oakland.

Contract for Residence Alteration

Mr. S. L. Hyman, Crocker building, San Francisco, has let a contract to Thos. Elam & Son, Builders' Exchange, for alterations to the frame residence of Mr. E. S. Newman, 171 Commonwealth avenue, San Francisco. The same architect has prepared plans for altering a three-story brick building on Kearny street, San Francisco, into modern apartments at an estimated cost of $12,000.

City Hall for South San Francisco

The City of South San Francisco is to have a new City Hall, from plans submitted by one of a quartet of San Francisco and Oakland architects in an informal competition. The improvements are to cost in the neighborhood of $50,000. The competing architects included Messrs. Werner & Coffey, W. Garden Mitchell, W. H. Weeks, and George W. McCrea.

Concrete Garage

Mr. C. H. Skidmore, Call-Post building, has made plans for a two-story reinforced concrete commercial garage, 66x137, with accommodations for one hundred machines to be erected on Post street, east of Leavenworth, San Francisco, for Mr. Henry Black. Building will cost $30,000.

Theatre Alterations

Messrs. Weeks & Day, Phelan building, San Francisco, are preparing plans for alterations to the MacDonough Theatre, Oakland. Mr. A. W. Pattiani will be in charge of construction work.

Scholarships for Special Harvard Students

Harvard University offers for the academic year 1918-19 three scholarships for special students in the School of Architecture with an income of two hundred dollars each, this being the amount of the tuition fee. Each such scholarship is therefore practically equivalent to free tuition.

The scholarships will be awarded to those candidates who, having fulfilled all other conditions, stand highest in a competition in architectural design to be conducted by the University.

Candidates must apply to the Chairman of the School of Architecture, Robinson Hall, Harvard University, Cambridge, Mass.

Candidates must have had a high-school education or its equivalent; they must have reached the age of twenty-one years before the beginning of the academic year 1918-19; they must have had at least three years' experience as draughtsmen in architects' offices, and must bring the recommendation of their last employer. Applicants admitted to candidacy will be notified in time to take part in the competition.

Recent Work of Miss Julia Morgan

Miss Julia Morgan, architect, with offices in the Merchants' Exchange building, San Francisco has completed plans for a recreation center for the Y. W. C. A. at San Diego. Miss Morgan has also made plans for a $10,000 residence in Claremont for Mr. Fisher, a private garage at Menlo Park for Mrs. E. W. Newhall and alterations to the San Francisco home of Mrs. Geo. W. McNear, Jr. The new Y. W. C. A. building at Camp Fremont, being completed, was designed by Miss Morgan.

One of the coming issues of the Architect and Engineer will illustrate Miss Morgan's recent work which includes a wide range of architectural effort throughout the State.

Mr. Walter H. Parker Joins Colors

Mr. Walter H. Parker, architect, with offices in the Hearst building, San Francisco, has joined the colors and is a lieutenant at Camp Lewis, Washington. During his absence, Mr. Parker's practice will be looked after by Mr. Jene Kenyon, his former partner, whose present address is the Forum building, Sacramento. Just before leaving for military service, Mr. Parker completed plans for a group of county hospital buildings to be erected at Elko, Nevada. Construction of these buildings probably will be started in June.

Mr. G. A. Applegarth Busy

One of the busiest architects in San Francisco is Mr. George A. Applegarth, Claus Spreckels building. He has over $500,000 worth of work under way or in prospect. Besides the new Spreckels building to cost $250,000 under construction at Spear and Harrison streets, Mr. Applegarth has let a contract for alterations and repairs to the two-story Class "A" store and loft building at 924 Market street, involving an outlay of $25,000. Plans have been completed for a one-story and basement brick building at Van Ness and Willow avenues, for Mr. J. H. Brooks, to be occupied by the Savage Tire Company. Plans are being prepared by Mr. Applegarth, for a three-story addition to the Tillman & Bendel building at Davis and Pine streets and changes to the present five stories, the entire structure to be arranged as an office building for the Spreckels Security Company. This work will cost in the neighborhood of $100,000. Sketches have been made by the same architect for a five-story reinforced concrete commercial building on the southeast corner of Second and Bryant streets, for Mrs. M. Cebrian. The building is to be leased by the United States Rubber Company.

Plan Factory Extensions

The California & Hawaiian Sugar Refining Company is planning further extensions to its plant at Crockett. The company's engineering department will turn out the drawings, the improvements to include a four-story steel frame addition to the refinery, a two-story steel and brick char-house and a two-story and basement concrete office building. About $150,000 will be expended on the work.

Apartments and Warehouse

Messrs. O'Brien Bros., Inc., 240 Montgomery street, San Francisco, have completed plans and have taken bids for a two-story store and apartment house at Isleton, for the Gardiner Company. The same architects have made plans for a two-story hollow tile warehouse to be erected at Brannan and Fremont streets, San Francisco, for the Toyo Kisen Kaisha Oriental Steamship Company.

Church Alterations and Additions

Mr. W. J. Wythe of Oakland is preparing working drawings for a new auditorium for the First M. E. Church of Eureka, Humboldt county, to seat 500 persons. The present auditorium will be converted into Sunday School and social rooms. About $16,000 will be expended for the improvements.

Palo Alto Bank Building

Mr. William H. Weeks, the San Francisco architect, has been commissioned to prepare plans for a two-story concrete and terra cotta bank and office building for the Bank of Palo Alto. The type of architecture will be classic with a colonnade facade. The estimated cost of the building and equipment is $65,000.

Mr. Weeks is busy with considerable other work, including three large commercial garages for the same owner in Watsonville, Santa Cruz and Salinas. Mr. Weeks also has the usual run of school houses, two residences and two store buildings, one in Tracy and the other in Woodland.

Apartment and 'Quake Proof Home

Messrs. Heiman-Schwartz, San Francisco architects, have completed plans for a three-story and basement frame apartment house for Mr. W. F. Dunn, on Washington street, near Polk, San Francisco. The estimated cost is $35,000. The same architects have made plans and are purchasing materials which will be shipped to Guatemala, for a $20,000 earthquake proof country residence for Mr. Batres, a wealthy resident of Central America. Plans have also been drawn for three $10,000 homes in Forrest Hill Extension.

New Club Building

The Union League Club of San Francisco expects to erect a new home on Post Street adjoining the Post street annex to the St. Francis Hotel. The property is owned by the Hobart estate. Mr. T. Paterson Ross will prepare the plans, the building to be four or five stories high and costing $200,000 or more. Mr. Ross recently awarded contracts for building a three-story frame apartment house on Bryant street, near Third, San Francisco for Messrs. C. and A. Madison.

Palo Alto Apartments

The final plans for a $40,000 apartment house for Mr. W. D. Wasson and associates at Palo Alto, have been prepared by Mr. John R. Miller of San Francisco. The building has been designed with patio and attractive front and will have four four-room apartments, eight two-room and three three-room apartments.

Mr. Ralph W. Follmer, 465 Lytton avenue, Palo Alto, has prepared plans for a two-story reinforced concrete store and office building to be erected at University avenue and Bryant street, Palo Alto, for Mr. O. O. Rhodes and associates at an estimated cost of $30,000.

Bogus Architect Gets $1500

The San Francisco Board of Supervisors recently received a letter from a citizen of Chicago requesting more details in regard to the erection of a capitol building to cost $4,500,000. The writer said he had loaned an architect (?) named Walter Oesterle $1,500 with which to complete the work on his plans for the structure.

The man making the inquiry is Wm. Biewer and he is in the stove business at 5059 N. Clark street, Chicago. He says in his letter: "I have no security for the money, but good will to help him to success. But he has gone and I can get no trace of him."

John S. Dunnigan, Secretary of the Board, has written to Biewer telling him that there is no such building in contemplation here.

Oakland Architects Busy

Messrs. Schirmer-Bugbee, 527 Thayer building, Oakland, have recently awarded a contract for the construction of a two-story frame and plaster apartment house on Lakeshore avenue, Oakland, for Mr. L. B. Hoag. There will be thirteen apartments. The same architects have completed plans for a bungalow and garage in Lakeshore Highlands, for Mr. Burno E. Schusman and are at work on plans for several homes to be erected in Lakeshore Highlands, for the Walter H. Leimert Company.

Frame Hotel and Apartments

Messrs. Train & Williams, 226 Exchange building, Los Angeles, are preparing plans for a two-story frame hotel and a two-story frame apartment building to be erected at Wilmington for Dr. J. W. Jones, 1970 Lovelace avenue. The hotel will contain fifty-six rooms, lobby, dining-room and billiard room. The apartment house will contain thirty-eight rooms divided into sixteen suites.

Concrete Apartment House

Mr. Arthur R. Kelly, 1110 Story building, Los Angeles, is completing plans and specifications for a fireproof apartment house to be erected at Jerome, Arizona, for the United Verde Copper Company. It will be a two-story structure, 70x250 feet, and will contain thirty-three apartments of two rooms, bath and dressing room each.

Brick Building

Mr. John C. Austin, 1125 Baker-Detwiler building, Los Angeles, has prepared plans for a one-story brick building to be erected on Main street south of Washington street for the Central & Pacific Improvement Company.

(Continued on page 115.)

Electrical Department

An Electrically Equipped Home in Pasadena

IN the West Adams Villa apartments, Pasadena, Mr. Irving J. Gill, the architect, has designed a real electrically equipped home, providing for electrical appliances with the same detail as he plans the plumbing and lighting fixtures.

He has thought of the part the rooms must take, individually, making them first, bright and cheerful by daylight, using great care that by night their tone shall not be changed. There are portable pedestal electric lamps with indirect lighting, giving the same soft light that the sunlight gives by day. The elimination of chandeliers and side lighting fixtures causes no breaks in the lines of the walls and ceilings. Electrically heated, there are no furnaces to be fired—the turn of a switch gives a radiant healthful warmth, free from poisonous gases, and the air is pure and odorless. The walls being of concrete and the window frames of metal construction as are all of the doors, which are hung on invisible hinges, there is no waste of heat or draughts to chill the rooms. The floors throughout are of a polished sandstone composition and when finished resemble rich leather with a play of color that is exquisite. Window sills are flush with the walls and baseboards are eliminated, primarily for the dustless idea, but give an unusual charm, forcibly convincing of sanitation. The tone of the walls is finished so as to reflect the color of every object in the room, responding to all the varying lights. Relative harmony in all these unusual features and electricity show the extremes which have been resorted to, to make this a modern structure in the progression of architecture.

Analyzing the electrical possibilities of such a home, one dwells upon the thoroughness and ease the household duties may be discharged. Artistic women find an interest in the arrangement of their homes and now that electricity has made it possible for them to take the actual work from the hands of the servants, the result is that personality and charm become subtle qualities.

Can one imagine a delicate woman, daintily gowned, sweeping great clouds of dust with a broom? Immediately the daintiness and delicateness fades from the mental picture when you think of the broom and the dust, but lo! put a vacuum cleaner in the same hands and dignity and charm are enhanced.

Women have their sphere and needlework and sewing is a natural accomplishment to most of them, but without the electric motor attached to the sewing machine, much of the beauty is obliterated through weariness and labor in operating the machine.

What woman is there who wouldn't long for that wonderful kitchen? It seems the longer you are in it, the more you are convinced that it is an electrical wonder! The electric ranges —built into the wall, no dirt to accumulate underneath the stove, no fuel to bring in to litter up the floors, no burnt matches and most of all, no drudgery about preparing a meal, whether for family or for any number of guests. It's all so simple—an automatic clock arrangement will even make it possible for you to cook your meal while you are shopping or visiting. Days of the housewife being busier and fuller than ever before, economy in time is of great import, while the saving in food is a patriotic demand.

Mr. Gill has installed two electrical necessities that need no applause to make them popular; their good points are rapidly grasped. One is the automatic electric water heater—"Everhot" is just what it is—hot water that is hot at the turn of the faucet, without having to think to light the heater an hour before it is to be used. The other is the iceless refrigerator—iceless and icemanless. Electrically operated, no uncertain deliveries or mud to be tracked in by careless deliverymen. Food preservation in a sanitary manner is alone a convincing feature.

The happy, cheerful woman of the home is an acquisition to humanity since housework can be eliminated of long weary hours and drudgery and servants. There is more time to be given to the whims and fancies and work becomes part of the day's pleasure and happiness and health prevail while the strain of the old methods of housekeeping are relics of "ye olden times."

Domestic Engineering

Plumbing and Sanitation

The Kitchen Demands Architect's Particular Attention

By DR. WM. PAUL GERHARD, Consulting Engineer.

THE architect fails to do justice to his client if he does not give particular attention to the fitting up of the kitchen.

The kitchen is the room intended for the preparation of the table food, hence the work done in it should be limited strictly to preparing the food and cooking it. Laundry operations, or other household work, such as the trimming of lamps, or the cleaning of shoes, should, if possible, not be carried out in a kitchen.

In city houses the kitchen occupies a part of the basement floor, except in a few instances, where it has been put at the top of the house. Such a location has some sanitary advantages, but also some drawbacks. In country houses, the best location is on the main floor in the servants' wing, and beyond the butler's pantry, which forms the connecting link between kitchen and dining-room. An underground or basement kitchen is usually undesirable as it is apt to be damp. An exception may be made where the house is located on a hillside, for this gives to the kitchen a free exposure and good ventilation.

A convenient, labor-saving kitchen equipment should consist of the following: a sink of generous dimensions, with drain boards; a cooking range with ventilating hood; a kitchen boiler for the required hot water, although in apartment houses and large mansions a hot water heater and storage tank are usually placed in the cellar; a kitchen table; a portable kitchen cabinet; and numerous hooks, shelves, cupboards and other devices for storage. In smaller houses the refrigerator is also often placed in the kitchen, but it is preferable to place this food receptacle somewhere outside of the kitchen and away from the heat of the kitchen, particularly if a coal range is used.

A writer on household economy has denounced the average kitchen sink as "the most ill-bred piece of equipment" of a home. Kitchen sinks should be made of a material able to withstand a long-continued service and hard wear. Its inside surface should be one not likely to be damaged by the frequent rough contact with pots, pans or other utensils. Its dimensions should not be too small, as regards both length and width, and generous inside depth is desirable, otherwise the usefulness of the sink will be much curtailed.

Sinks are made in soapstone, slate, iron ware, and of solid buff or white porcelain. An attractive fixture is a white-enameled roll-rim iron sink with integral back or splash board, which being all in one piece avoids the usual dirt crevices at the joints. But an enameled surface is somewhat liable to chip off or to crack, unless the sink receives very careful usage. Far more durable and perhaps the most sanitary are the white solid porcelain sinks, the cost of which is necessarily higher.

Sinks should be not less than nine or ten inches deep, and sufficiently wide to contain a medium-sized dish pan. It is best to set them on concealed hangers or wall brackets, rather than on legs, for this arrangement leaves the entire floor under the sink open and easily cleaned. The puzzling question of whether to have a left- or a right-hand drain board is perhaps solved in the simplest manner by providing a drain board at each sink end, using one for the soiled dishes and utensils, the other for draining them after they are washed. If the space is limited, the single drain board should be put to the left facing the sink.

A sink without any drain board is of little use in a kitchen. It is best to have the drain board hinged, as this aids in cleaning the tiled wall at the sink.

Whatever the material selected for the kitchen sink may be, it is of very great importance that it should be so fitted as to have a correct and comfortable working height.

*Abstract of an article on "The A B C of Sanitary House Drainage."

Until quite recently, the great majority of kitchen sinks were set several inches too low, necessitating stooping over and rendering the daily task of the kitchen worker, of preparing food at the sink and of dish- and pot-washing, one of the utmost fatigue.

The same fault, it may be incidentally remarked, was found in the older kitchen ranges and in the working table. The proper height of the top rim of the sink is from thirty-three to thirty-six inches above the finished floor.

Large kitchens often contain two sinks, one being a vegetable sink of buff or white color, intended for the cleaning and preparing of the vegetables. This sink should preferably have two compartments, and be fitted with plugged waste outlet. so as to hold water.

The sink in the butler's pantry is intended for the washing of the dinner table china and glassware. To avoid breakage of the expensive glass and china ware, this sink is often made of planished red copper, or else of German silver, where the much greater cost of such a fixture is no objection. But a white porcelain pantry sink is the most sanitary and can be used in connection with a wooden portable inset receptacle. In many country houses of well-to-do people one finds German silver sinks, shaped in two compartments, one for washing, and the other for rinsing and draining.

Wisconsin Architects to be Registered

The architects' registration law has been passed by the Wisconsin legislature providing that no person doing business in Wisconsin shall make use of the title architect, or so represent himself without a certificate of registration. A board of five examiners will have full power to prescribe rules and regulations for the examination and registering of architects. Candidates will be required to submit satisfactory evidence as to their thorough knowledge of building construction, building hygiene, architectural history and mathematics. Five years' experience is also required.

In lieu of examination, the board may accept a diploma of graduation from a recognized architectural school supplemented by at least three years' experience. Examination may also be waived in cases where an architect is registered in another state or country having satisfactory standards. Any person already engaged in the practice of architecture at the time of the passage of the bill may receive a certificate without examination.

With the Architects

(Continued from Page 110)

Jurors for Competition

The following names of candidates for juror for the California State Building Competition at Sacramento were elected by letter ballot by the San Francisco Chapter members. The ballots were counted by the Board of Trustees of the Chapter on April 5th, and from the ten names which received the greatest number of votes two candidates will be elected for final service on the jury:

Morris M. Bruce, Bernard R. Maybeck, Sylvain Schnaittacher, George W. Kelham, Wm. C. Hays, Ernest A. Coxhead, Edgar A. Mathews, James W. Reid, Henry H. Meyers, Houghton Sawyer.

Workingmen's Cottages

First definite information in regard to the Government's plans to provide accommodations for the several thousand employees of the thirteen shipbuilding plants on the Pacific Coast, was given out recently by Mr. Meyer Bloomberg, who has been stopping at the Palace Hotel, San Francisco. Mr. Bloomberg says an average of 700 workmen's cottages costing $2,000 each will be constructed at or near each of the thirteen shipbuilding plants.

Church Improvements

Mr. C. W. Dickey, Oakland Bank of Savings building, Oakland, is preparing plans for alterations and additions to the First Congregational Church, Oakland. An addition, 18x50, will be built on the lot between the church and the Orpheum Theatre to be used for Red Cross and social work. Mr. Dickey is also preparing plans for a $15,000 country house near Saratoga, Santa Clara county, for Mr. B. F. Williard.

Church Alterations

Mr. Albert C. Martin, 432 Higgins building, Los Angeles, is preparing plans for alterations and additions to the frame chapel of the Roman Catholic Church on Green street, between Eighth and Ninth streets. The addition will be erected in the rear of the present building and will add 300 seats to the capacity of the church.

Hotel Alterations

Mr. William H. Crim, Jr., 425 Kearny street, San Francisco, has completed plans for extensive alterations to the five-story Class "C" store and hotel building on Shattuck avenue, Berkeley, owned by Mr. Bruce Cornwall. The bids for the work have been taken. Mr. Crim has also completed plans for a factory building to be erected on the southwest corner of Fifteenth and Vermont streets, San Francisco, for Mr. Edward A. Norton.

Annear Enters Service

The board of supervisors of Stanislaus county has appointed Mr. J. H. Hoskins acting county surveyor to fill the unexpired term of Mr. Edgar H. Annear, who has been given a sixty-day leave of absence from the county to enlist as captain in the Twentieth Engineers, now at American University, Washington, D. C.

Seattle's Housing Problems

In an address before the master builders of Seattle, held in the Master Builders' Hall, Arcade building, on Tuesday, March 12, Mr. Carl F. Gould, A. I. A., set forth the problems confronting Seattle in solving the housing problem. Mr. Gould suggested the building of a specimen bungalow in the downtown district, where the public could note each step in its construction.

Club House Alterations

Messrs. Schwartz & Schwartz of Fresno, have completed plans and work will be carried on by day labor for extensive alterations to the old Riverside Country Club house at Fresno. The new owner is Mr. E. J. Bullard.

To Build First School Unit

The Eureka Board of Education has decided to build at once a new unit to the Winship School to cost $14,000. Plans for the building, which will cost, complete, $75,000, have been prepared by Mr. Newton Ackermann.

Aeronautical School

The United States Government has selected San Diego as a site for the proposed new Army and Navy aeronautical school. There is already a temporary school there. More than fifteen buildings are to be constructed.

Chief of Architectural Bureau

Mr. Milton Clark has been appointed Chief of the Bureau of Architecture of the city of San Francisco.

Book Review

AN INTRODUCTION TO THE STUDY OF LANDSCAPE DESIGN. By Henry Vincent Hubbard and Theodora Kimball. Published by Macmillan Co., New York. Illustrated. Price $6. net.

This is a book which landscape architects and designers have long been waiting for. The book is not a handbook on gardening or a treatise on horticulture, nor again an airy rhapsody on the beauties of natural and artificial landscapes, but a broad outline of the principles that underlie artistic landscape design and its successful execution.

It reviews the various styles of landscape design. It analyzes the relation of their styles to various types of natural landscapes and sets forth clearly the subtle balance that should be maintained between art and nature in this art, which is largely dependent upon natural forms for its expression.

In addition to the chapters on the theory of landscape composition, there are chapters—notably one on professional practice and one on land subdivision—which students and young practitioners will find very helpful.

The text is supplemented with valuable foot-notes and references, and there is a comprehensive bibliography on landscape architecture.

The illustrations are original pen and ink sketches of the world's masterpieces of landscape art, coupled with a series of thirty-six photographic plates, showing various types of created and natural landscapes.

The book is unique; the best thing in its field yet published in America. It should prove a valuable reference for the practising landscape architect, a suggestive work to the student and informative to laymen and allied practitioners.

Reviewed by,
NEAL T. CHILDS,
Landscape Architect.
68 Post St., San Francisco, Calif.

Partnership Dissolved

The partnership heretofore existing between Messrs. Wheeler & Halley, architects, 314 Union building, San Diego, has been dissolved, and Mr. William H. Wheeler will continue the practice of the profession with offices in the Spreckels building, San Diego. Mr. Wheeler will be pleased to receive catalogues and other trade literature, especially of Coast productions.

Heating and Ventilating

Air Cooling Scheme for Houses

SPEAKING on the subject of "Prizes for the Inventor" before the graduating class of the McKinley Manual Training School in Washington, Dr. Alexander Graham Bell told the graduates about the experiments he had been conducting for cooling the air in his own home and emphasized the possibilities in this direction. This part of his address as published in the National Geographic Magazine, is given herewith:

The problem of cooling houses is one that I would recommend to your notice, not only on account of your own comfort, but on account of the public health as well.

I have found one radical defect in the construction of our houses that absolutely precludes the possibility of cooling them to any great degree. You will readily understand the difficulty when you remember that cold air is specifically heavier than warm air. You can take a bucket of cold air, for example, and carry it about in the summer-time and not spill a drop; but if you make a hole in the bottom of your bucket, then, of course, the cold air will all run out.

Now, if you look at the typical tropical houses, you will find that they are all open on the ground floor. Supposing it were possible to turn on a veritable Niagara of cold air into a tropical house, it wouldn't stay there five minutes. It would all come pouring out through the open places below and through the windows and doors. If you want to find your leakage places, just fill your house with water and see where the water squirts out!

I began to think that it might be possible to apply the bucket principle to at least one room in my Washington home, and thus secure a place of retreat in the summer-time. It seemed to be advisable to close up all openings near the bottom of the room to prevent the escape of cold air and open the windows at the top to let out the heated air of the room.

Now, it so happens that I have in the basement of my house a swimming tank, and it occurred to me that since this tank holds water, it should certainly hold cold air; so I turned the water out to study the situation. The tank seemed to be damp and the sides felt wet and slimy.

I reflected, however, that the condensation of moisture resulted from the fact that the sides of the tank were cooler than the air admitted. Water vapor will not condense on anything that is warmer than itself, and it occurred to me that if I introduced air that was very much colder than I wanted to use, then it would be warming up in the tank and becoming dryer all the time. It would not deposit moisture on the sides and would actually absorb the moisture there.

I therefore provided a refrigerator in which were placed large blocks of ice covered with salt. This was placed in another room at a higher elevation than the tank, and a pipe covered with asbestos paper was employed to lead the cold air into the tank.

The first effect was the drying of the walls, and then I felt the level of the cold air gradually rising. At last it came over my head. The tank was full, and I found myself immersed in cool air. I felt so cool and comfortable that it seemed difficult to believe that Washington stood sizzling outside. I climbed up the ladder in the swimming tank until my head was above the surface, and then found myself breathing a hot, damp, muggy atmosphere. I therefore speedily retreated into the tank, where I was perfectly cool and comfortable.

Guided by this experience, I tried another experiment in my house. I put the refrigerator in the attic and led the cold air downward through a pipe covered with asbestos into one of the rooms of the house. The doors were kept shut and the windows were opened at the top. The temperature in that room was perfectly comfortable, about 65 degrees F.

At that time the papers were speaking of some ice plant that had been installed in the White House and congratulated the President upon a temperature of only 80 degrees F. when the thermometer showed 100 degrees outside. At this very time I enjoyed in my house a temperature of 65 degrees, with a delicious feeling of freshness in the air. Even when the air had risen to the same temperature as the rest of the house, as measured by a thermometer, the room still felt cool, because the air was drier, thus

promoting perspiration that cooled the skin.

In this connection I may say that there is a very interesting cooling plant in Paris, France, run by the Societé de L'Air Comprimé. Very many of the cafés and restaurants in Paris have cold rooms for the storage of perishable provisions, and these rooms are cooled by compressed air supplied by this company.

The plant consists of large pipes laid under the streets of Paris, with small branch pipes leading into the cafés and restaurants. At a central station steam-engines pump air into the pipes and keep up a continuous pressure of from four to five atmospheres. As there are several hundred kilometers of these pipes under the streets of Paris, they form a huge reservoir of compressed air at the ground temperature.

In the cooling room of a café they simply turn a little cock and admit the compressed air into the room. A gas meter measures the amount of air admitted and charges are made accordingly.

The compressed air, by its expansion, produces great cold, and the cooling effect is still further increased by allowing the air to do work during the process of expansion. Dumb-waiters, elevators, and even sewing-machines are thus run very economically in connection with the system by means of compressed-air engines.

Now, it appears to me that this process might very easily be developed into a plan for the cooling of a whole city. You would simply have to turn a cock in your room to admit the fresh air.

May Build Open-Air Theatre

A big open-air theatre on Rubidoux Mountain at Riverside has been proposed by citizens of that city who believe that it could be utilized for conventions as well as for the established Easter sunrise service. Preliminary plans for an amphitheatre to seat 10,000 persons and to cost from $35,000 to $45,000 have been prepared by Mr. Frederick Heath, who designed the famous stadium at Tacoma, Wash., and they are now on exhibition at Riverside.

Sacramento Bank Building

Mr. Clarence C. Cuff of Sacramento has been commissioned to prepare plans for a one-story branch bank building at Thirty-fifth street and Fourth avenue for the Citizens' Bank of Sacramento. The building will cost $20,000.

Richmond Apartment House

Mr. J. B. Ogborn, 821 Bissell avenue, Richmond, is completing plans for a $20,000, three-story and basement frame store and apartment house to be erected on 19th street, Richmond, for Mr. J. L. Barnaman.

Painting in Los Angeles

According to an estimate made by the Master House Painters and Decorators' Association the painting business in Los Angeles amounts to about $9,000,000 annually, and about 5000 persons are engaged in the industry. The enormous volume of this business is one of the arguments advanced by the association in favor of the enactment of an ordinance to license master painters in the city of Los Angeles.

It is contended that the public is defrauded of millions annually by the use of "doped paint." "Doped" paint looks so much like good paint that only time or a chemical analysis will detect the fraud. One of the primary objects of the painters' license ordinance, the association claims, is to protect the public against fraud by an inspection of paint.

Architect Boosts Tractor for Farm

Mr. Harrison Albright, architect, of Los Angeles, sent a telegram to President Wilson urging the purchase by the government of tractors to be sold to the farmers at cost as one of the most certain methods of stimulating food production. The telegram follows:

> Everywhere Government posters say "food will win the war," yet everywhere the want of preparation to raise crops and conserve food is apparent. Today's papers say Henry Ford will sell the Canadian Government 1000 tractors, and it, in turn, will sell the same to the farmers at cost. European governments are purchasing Ford tractors in great quantities, yet none are available for American use. If half of the reported number were sent to California, none would be needed abroad, for, with proper co-operation of tractors, men and seed, California alone could provide sufficient food for all citizens and armies fighting with America.

Rats Cut Insulated Electric Wire

A piece of insulated 14-gauge copper wire completely gnawed in two by rats is an "exhibit" recently placed in the City Electrician's office. It was taken from a downtown confectionery store. The wire fed a fixture hung from a hollow beam which formed a part of the false ceiling. Rats had entered the hollow beam and gnawed at the wire. When the light went out wiremen made this unusual discovery.

$50,000 San Jose Bridge

Plans have been approved and bids are wanted for the construction of a $50,000 reinforced concrete bridge over Coyote Creek, on Seventeenth street, San Jose. The drawings were made by City Engineer G. Walter Hunt and A. V. Saph, consulting engineer, of San Francisco. Alternate bids will be taken for a single arch and concrete girder bridge.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

The Woman in the Case

WHETHER he likes it or not, the Builder has to deal with a Woman at some point in the construction of a house. Possibly there may be more than one—and then the matter is still more complicated; for there is a goodly percentage of grown daughters who are still living at home for one reason or another, and who have very decided ideas in the matter of comfort and convenience in the arrangement of a house. They are not going to take unnecessary steps, they would have you understand, and wear away their perfectly good lives doing housework; and they are strong on cosy nooks a little removed from the rest of the family, and dimly lighted porches.

The number of these young persons is growing greater, too, with the progress of the war; but you will have to put up with them as patiently as you can, Mr. Builder—for just think of the house building business they will help to control when the war is over!

Perhaps the chief reason why the Builder and the Woman do not always get on well together is that the latter, even in matters of building, takes it for granted that she can exercise her feminine prerogative and change her mind as often as she pleases. This may mean the moving of a partition 7 inches—exactly 7, she insists—even though this may take it away from the point where you have so carefully doubled the floor joists as called for by the blue prints. But what does she care for such things as eccentric loading, as compared with a place to set a chiffonier?

This moving of the partition may mean, too, the cutting down of the size of a door, even though the original door is now on the way from the mill; but that is a mere incident—for you know there is that handsome rug at the People's Store, marked down to $47.93, which will just fit the dining room with this new arrangement!

And so the Builder cuts and fits, tries and experiments, until something is found which suits her fancy, building a house after the fashion of a dressmaker working on a party gown.

But be as patient with her as you can. For the house is the larger part of her world. She lives in it 24 hours for most of the days of the year; she has to keep it clean, and get the meals, and look after the entertainment and comfort of company. The Man is out most of the day, and is satisfied for the most part if he has a pleasant corner for a Morris chair where he can read and smoke in the evening; and with his minimum of requirements he is likely to forget the Woman and think only of economy and speed when it comes to building a house. So be easy with her. In a big lot of cases she would not get closets, and a pantry, and modern kitchen equipment, and built-in furniture, if she did not get up and fight for them.

So to that extent you can thank her for making business for you. For many a Builder would now be looking for some other means of livelihood if the planning of our homes were left entirely to the men. But the Builder can help to minimize changes and delays incident to this woman question by taking the Woman into consideration in the first place and having a complete understanding with her—or at least as complete as the feminine nature will permit. Design your houses from the Woman's viewpoint—for ease of work, for daytime comfort, with plenty of places to put things.

There are certain things that the woman who is thinking of building a house must consider first of all, says the National Builder, and those include the light and ventilation of the dwelling, convenience of arrangement of the rooms with regard to the saving of steps—their lighting and ventilation also—privacy both within and without, and outlook, according to Miss Marcia Mead, an architect of New York, who is quoted as saying:

"An L or T-shaped plan, long and narrow, gives better light and ventilation for a house than does the box plan, and it is an exploded theory that the latter is so much cheaper than the former; there really is not so much difference in the cost. The long, narrow house may be a trifle harder to heat, perhaps, but that is quite overbalanced, it seems

to me, by the better arrangement of light and by the better ventilation which it provides. Such apartments as living-rooms, dining-rooms and bed-rooms should have two exposures wherever possible; then sewing-rooms, linen closets and bath-rooms may be built within—that is, where they have but one window each, which will be sufficient.

"The majority of people think that they must have a porch; in fact, it does not seem to occur to them not to plan for one. Really, however, a porch is not nearly so necessary as it is supposed to be. If the house is so placed that the living-room faces east, so that it will be shady in the afternoon, a terrace would be much better, for it would not shut off the light from the house; under no consideration should a porch be allowed to shut off direct light from a room. A terrace does not interfere with that and is really pleasanter in many ways, and one may always build a portico over the door with a seat at each side.

"What I advocate for single houses, as a rule, is that they have gardens at the back and put the kitchen on the front of the house. That plan has many worthwhile advantages, and it may be handled well architecturally, I think. First of all, the housekeeper has a view of the street before her when she wants such a view, in the morning when the tradesmen come in and out after orders. Then, in the afternoon, when she is at leisure, she will probably take much more pleasure on a porch or terrace at the back of the house, overlooking her garden, than out in the public eye, on the street side of the house.

"Even though she has a vegetable garden, it may be arranged artistically, so that she will enjoy sitting where she can look out upon it. And, if her living and dining rooms are so arranged as to look out upon that garden at the rear, they will have a pleasanter outlook by far, in most cases, at least, than if they were on the street side of the house. In the case of single houses, too, a porch on the sunny side is quite permissible.

"The case of houses in a block is quite different from that of the single dwelling. Where one might well place a porch on a single house, it might be far more advisable to put a terrace before the houses of a block. Sleeping porches should be arranged carefully, too. The best way is to have them arranged under the roof of the house, to be, in reality, rooms with open sides.

"Too often it happens that single houses are built so closely together that the side windows are quite useless for light and ventilation. One should see that there were at least twenty feet between her house and her neighbor's, and as much more space as possible. Side windows, where houses must be built close together, might well be cut in the walls, as they are more useful for ventilation than for light, and thus the space below them is conserved for other uses.

"One gratifying thing about present-day building is the fact that people are more and more realizing the necessity of planning neighborhoods. One cannot build to himself alone, any more than he can live to himself alone. A woman must consider her surroundings on all sides and the relations which her home is to bear to others. Towns and cities are now taking up this neighborhood planning movement; perhaps country planning will result, which would be an excellent thing.

"The woman with a feeling for beauty will demand good proportion in her house and good fenestration—that is, arrangement of opening—and proportion of wall spaces as well. It does not matter about trimmings, if that is successfully managed; the correct proportion of all spaces is a point of beauty which is essential to good architecture and may be effected in the simplest, most inexpensive house, as well as in the most elaborate and costly.

"Another essential about which I feel strongly is a private entrance for each family, in a house built to contain several homes. This is needed not only to secure privacy for each family, but also because, in the case of the tenement house, no one, as a rule, takes responsibility for the care of a common hall; thus it is often either neglected or the burden of its care falls on one or two. In the same way, I would insist upon private back yards for each family, the space to be marked off in some way, perhaps by a low hedge, with private gate and walk for each.

"Within the house, one of the most important rooms is the kitchen, no matter whether the mistress herself spends much of her time in it or whether she installs a maid for the work done there. In the first place, the working surface should be considered most carefully. The sink should be high enough for the woman working at it to be able to stand erect; a good plan is to see that the bottom of it is about 30 inches, the top of it 40 or 42 inches above the floor. The tops of the wash trays, also, should be 36 or 38 inches from the floor. The designer should study the height of the average woman and adjust such things to her; it is much easier for the short woman to use a stool to stand up on than for the tall woman to be obliged to bend over. For the woman who does her own work, it is important that her working surfaces and tools be centralized as far as is possible. For example, if she cannot have a separate laundry on the same floor, she should have her wash tubs in her kitchen in order to save running up and down stairs when she has tradesmen to inter-

view, children to care for and meals to prepare, too. A central light has no place in a kitchen. There should be at least two side lights and more, if possible, where they seem to be needed. And that should be arranged, at the left of working surfaces, so that the worker will not cast a shadow over her work.

"It is gratifying to note how much more sanitary bases are being used; we are getting away from wood trim almost entirely, in many cases, and cement is so much easier to keep clean, particularly with rounding surfaces in place of corners.

"One word about windows. Why do we not have more casement windows in our houses? It is so much better to have the advantage of the full opening, and casement windows are also so much prettier and more decorative than the others; they have a more cordial, inviting air about them."

A Building Contractor's Satire on Architects' Specifications

GENERAL: The plans and specifications are to be taken together. Anything shown in the plans and not mentioned in the specifications and anything mentioned in the specifications and not shown on the plans is to be considered as both shown and specified; and anything wanted by the architect or any of his friends, or anybody else, (except the contractor) shall be considered as shown and specified, implied and required, and shall be provided by the contractor without expense to anybody but himself. If he can do the work without expense to himself, the work shall be taken down and done over again, until the expense is satisfactory to the architect.

Architect: The term architect herein appearing shall be understood to mean the architect or any engineer that he foolishly but courteously employs to assist in making trouble for the contractor.

Plans: The plans are to be considered diagramatic, and are to be followed only where space conditions make it possible to avoid so doing. Coincidence between the plans and executed work shall not be considered a claim for extra compensation. The architect is not required to recognize coincidence. Anything that is right on the plans is to be considered right; anything that is wrong on the plans shall be discovered by the contractor, and shall be made right without telling on the architect or on bills. Anything that is forgotten or missed out of the plans and specifications, but which is necessary and required for the comfort and convenience of the owner, shall be provided by the contractor, to the satisfaction of everybody (except the contractor) and in full accord with the evident intent and meaning of the specifications, without extra cost to anybody but the contractor.

Rules and Regulations: The work throughout shall comply with all rules, regulations, caprices and whims of all city, county, state, national and international departments, bureaus and officials having or not having jurisdiction.

Materials: All the materials shall be the best of their several kinds. The contractor is expected to know and provide the best, irrespective of what is specified in detail. The architect reserves the right to change his mind about what is best. Any changes necessary to make work and material fit the mind of the architect shall be made by the contractor without extra charge.

Permits: The contractor shall obtain and pay all fees, annual dues, assessments and subscriptions to masked balls, organizations and coat and hat checks.

Guarantee: The contractor shall guarantee and does guarantee that he will keep in complete working order, anything that the architect asks him to attend to, so long as there is more work in sight in the architect's office.

Arbiter: In case of any dispute arising as to the nature, character, or extent of work shown, specified or implied, the matter will be decided by ref-

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erendum and recall, after which the decision shall be set aside and revised by the architect and designer-in-chief of the national government.

Payments: Payments, if any, shall be made on the architect's certificate. Architects' certificates shall not be considered negotiable, nor are they legal tender. When once issued, the architect assumes no responsibility for their future usefulness. Partial payments shall be made as the work progresses in the amount of 85 per cent of the value of the work done, as judged by the architect. In no case shall the judgment of the architect cover more than enough to pay the wiremen and helpers every Saturday night. The material men must take the customary chances. The final payment, if any, shall be made when everybody is satisfied (but the contractor). Any evidence of satisfaction on the part of the contractor shall be considered a just cause for withholding final payment.

The contractor shall accept and hereby does accept the conditions hereinbefore appearing, for himself, his ancestors and progenitor, his family, heirs, executors, his ox, his assignee and the stranger within his gates.—Exchange.

Things to Remember About Chimneys

By E. C. MOLBY,

in The Heating and Ventilating Magazine.

IT is well to know that the area, the height, and the construction of a chimney flue is of the greatest moment to the boiler manufacturer, the steam fitter and to the house owner.

In the construction of a chimney in connection with a power plant, the areas and construction of that chimney are very carefully figured out by the engineer to take care of the work that is to be placed on it.

In the construction of a chimney flue for a heating boiler, very little attention ordinarily is given to its suitability for the work in hand. The chimney has usually been assigned whatever space has been left after the arrangement of the rooms has been decided.

At the present time, however, there has been a great improvement on the construction of chimney flues for heating boilers, but generally flues are still constructed along the old lines that an 8-inch flue is big enough for any heating boiler, and wherever the flue has been put in with 8-inch tile, which is less than 7 inches square inside, in only a few instances has this area been sufficient to give proper combustion for the boiler placed on it.

It can be proved that there have been more boilers condemned on account of poor chimneys or poor draft than for any other reason. When the owner burned a paper in the bottom of the flue and because the flame went up the flue he has contended that his chimney was perfectly good and everything that could be desired. This does not prove the volume of the flue, only shows velocity, not capacity, and is in no sense a test of the flue or flue conditions.

A chimney flue should be of sufficient area and height to give to the boiler volume of air for the proper burning and combustion of your fuel, and should be constructed in each case according to the heating requirements. A high flue of small area is equal to a low flue of large diameter on account of its greater velocity.

The flue should be round preferably, or square as a second choice, and should never be oblong except that it is of good proportion and not very narrow nor very long.

The flue should be straight, without offsets, and where tile lined, the joints should be carefully cemented, and the ordinary brick flue should be plastered or pointed smooth on the inside to close all openings and prevent leakage.

A separate flue should be built for each stove, fire place, or boiler, except that one flue can be used for a battery of boilers in which case tight fitting dampers should be placed in each smoke connection.

Two chimneys should not be connected at the bottom as is often done, but each flue should run separately and be distinct in all its parts from the bottom to the top.

The flue should be high enough above its surroundings to avoid back drafts from currents of air over the roof or surrounding buildings, and in many cases trees covering too closely over a chimney will affect its draft.

In the construction of flues, many times the builder will put two flues in one chimney and fail to grout in between the tiles so that the two flues are connected between the sections of tile from top to bottom. To avoid this there should be a partition between the tile flues, and the spaces around the tile grouted in with mortar.

The flues should be so built that all of the air that passes into them passes through the boiler.

The smoke connection from boiler to chimney should be carefully cemented.

The clean-out door at the bottom of the flue should be tight.

In case of more than one flue in a chimney there should be no leakage from one to the other. Two flues should not enter into the same clean-out chamber.

Apartment House

Messrs. Edward T. Foulkes, and E. H. Hildebrand, have taken bids for the construction of a three-story frame apartment house on Vallejo street, between Hyde and Leavenworth, San Francisco. It is estimated the building will cost $30,000.

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New Plant of Philadelphia Quartz Company of California

Among the important engineering projects in the San Francisco Bay District, completed during the early part of this year, is the plant of the Philadelphia Quartz Company of California, occupying some five square blocks on Grayson street between Third and Eighth streets, in West Berkeley.

The Philadelphia Quartz Company are specialists in the manufacture of silicate of soda in its various forms. The plant just erected is said to be the most complete and up to date in this country. Among the many unique features are seven concrete tanks for the storage of silicate of soda. The dimensions of these tanks are as follows:

4 tanks 30 ft. in dia. 30 ft. high.
2 tanks 15 ft. in dia. 45 ft. high.
1 tank 30 ft. in dia. 60 ft. high.

The walls of the tanks are 10" thick. Each tank rests upon a solid block of reinforced concrete 32 ft. in diameter and 6 ft. thick.

The usual method is to construct these storage tanks of steel. When it was decided to use concrete instead of steel, the question of a suitable concrete aggregate was uppermost in the minds of the engineers, the Folwell & Ahlskog Engineering Company of Chicago. After a series of exhaustive tests, it was decided that the gravel and sand produced by the California Building Material Co. best met the rigid and exacting specifications of the engineers. The California Building Material Company's gravel and sand made an ideal concrete aggregate—maximum density and resistance to chemical action by tank contents being the result desired and attained with the use of this company's gravel and sand.

In addition to the concrete tanks above mentioned, there was also erected, a concrete chimney, octagonal in shape, 130 ft. high and 5 ft. inside diameter, walls of the stack 10 in. thick.

The California Building Material Company's gravel and sand were also used exclusively for all the concrete work for the erection of the general plant buildings of the same company, a total of over 10,000 tons being consigned to the West Berkeley factory.

The San Francisco offices of the California Building Material Company are located in the new Call building, 74 New Montgomery street. Mr. F. N. Woods, Jr., is the president and general manager of the company, the largest producers of gravel and sand in Central California.

Invited Bids and Cost of Estimating

The owner who has even a faint idea of the cost of estimating a set of plans is the exception—not the rule. The average owner, with limited knowledge of building conditions, has a nebulous idea that a contractor can give him an estimate about as readily as a wholesaler can supply a figure on a carload of potatoes.

"What's your price? If it's right I'll give you the job." That's the attitude of many owners. These owners regard the obtaining of a contractor's estimate much the same as the man who goes shopping to buy an overcoat and visits half a dozen stores before he makes a selection.

It isn't the fault of the owner—it's the fault of the system. It's a condition that has grown up with the contracting business.

A dozen, fifteen, perhaps even as many as twenty contractors figure a job. The total cost of making all these estimates, runs up, on a fairly big job, to a good many thousand dollars.

One contractor gets the job—perhaps. Maybe the owner changes his mind and doesn't build at all. What then? The contractors have presented him, in effect, with several thousand dollars. They can't get it back from him. He pays his architect, but not willingly. Paying for plans that are never translated into terms of steel and concrete and brick is like paying for "a dead horse."

The owners never give a second thought to the contractors who put "their good money" into figuring the job. Nevertheless, they have to be reimbursed somewhere—some way. If they don't get the money back that they spend in estimating they'll go into bankruptcy in the long run. So their only recourse is to figure it in as "overhead"—charge it up against the job they finally get. Perhaps they get one job in ten that they figure. That's a conservative estimate. So the owner who builds has to pay in the final analysis the cost of estimating the plans on all the jobs that the successful contractor figured for other owners but didn't get.

It's not a fair arrangement. One solution lies, of course, in the contractors getting together and dividing the expense of having an estimate made by an engineer. Other plans have been evolved, and some of them have attained a moderate measure of success. Make the owner pay for the estimate, say some men, with a very excellent reason to back their contention—and let the contractors all submit bids based on the owner's estimate.

That's fair. Fair to the owner and fair to the contractors. But the plan has never been widely adopted, though the idea has gained headway.

The National Association of Builders' Exchanges tackled the problem at their recent convention at Pittsburgh. Section 12, in the code of ethics which they adopted, reads as follows:

"Competitive bids, submitted by invitation, shall be subjected to compensation to each and every bidder from the owner, or the architect, or both, in the event no award of the work being made to those bidding."

The owner ought to be reasonably certain that he will build before he invites contractors to figure the job. The contractor ought to have reasonable assurance that someone is going to get the job, and if he submits figures on invitation and no award is made there ought to be a definite understanding that he be fairly reimbursed for his time and cash outlay.

For the situation that exists today no one is to blame except the contractor himself. He has permitted the present system to grow in his desire to "go after" the work.

The general adoption of a rule compelling owners to pay the cost of figuring invited bids when no award is made would be a step in the right direction.

But there is another evil that has sometimes been practiced. There have

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been owners who have invited figures from contractors to whom they had no intention of awarding the work. They have done this in order to "check up" the figures of the man to whom they intended to give preference. It has been a cheap and easy way of keeping the pre-selected contractors within bounds.—Improvement Bulletin.

Increased Demand for Surety Bonds

During war times and the incidental readjustment of business methods, it is the order of the day for far-sighted people to take fewer chances in their transactions. Caution is the watchword and people who build are giving more thought than ever before to surety bonds. Figures of the last year show an increase in the hazard of letting contracts and sub-contracts without bonds, caused largely by fluctuation in the markets of labor and material. An architect cannot be sure that this client's building will not cost more than the contract price unless completion within that figure is guaranteed and protection from liens is given by a bond backed by sufficient financial strength.

"Those people who look behind a bond for the security it represents are fully satisfied with the Contract Bond of The Fidelity and Casualty Company of New York," said Mr. J. R. McKinney, manager of the Bonding Department, San Francisco branch of this concern. "It is in the front rank of the standard companies of the country. It obtained the first charter to write bonds in this country, and is, therefore, properly called 'The Pioneer Bonding Company of the United States,' and has an unexcelled record of service and stability. This record has been a great comfort to a steadily increasing clientele among owners, architects and builders."

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THE accompanying illustrations show the new home of the Plant Rubber and Asbestos Works at 537-539 Brannan street, San Francisco. The growth of this concern has been little short of phenomenal. In 1908 the company required less than 900 square feet of floor space. Their present three-story building covers a ground area of more than 36,000 square feet. The building was designed by Messrs. Coxhead & Coxhead, and was built especially for the lessees by the Allyne Estate. The ground floor contains the offices and shipping department, the second floor the stock rooms and the third floor the factory.

It has been the firm's aim to manufacture more and more the goods which they handle and to especially work on products that are available in California. For instance, they make entirely all their own Asbestos Air Cell Covering so largely used in our heating plants in city and country, and on low pressure steam pipes and it is well known among the architects and engineers that their material is equal in every way to the Eastern product.

Their 85 per cent Magnesia Pipe & Boiler Coverings are almost entirely a California product, while the large Eastern manufacturers utilize dolomite from which to extract their carbonate of Magnesia. The product of the Plant Rubber Company is made from magnesite mined in California. California cotton has been used but not entirely, and these enterprising business men say that in the near future they hope and expect to use asbestos mined in California instead of that exported from Canada.

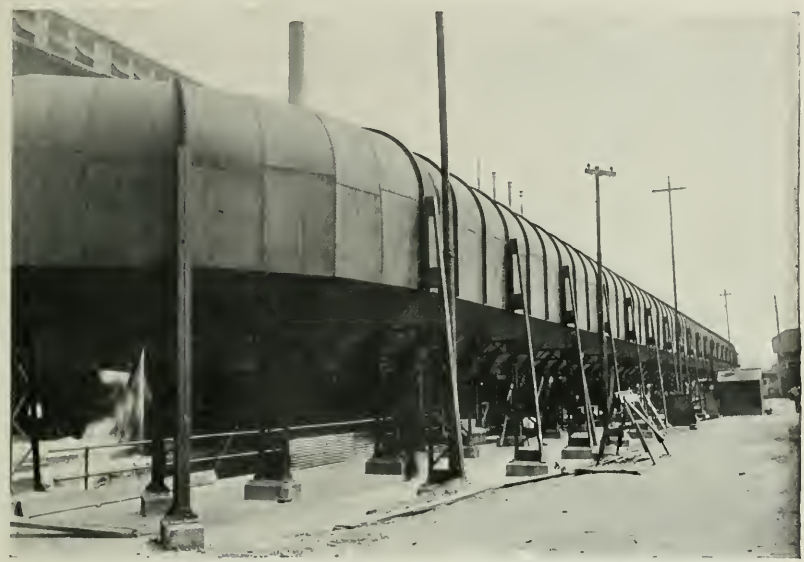
The company also carries a full line of packings and mechanical rubber goods such as hose for water, steam, oil and fire and leather, rubber and canvas beltings.

To Be U. S. Engineer

Mr. Frank T. Georgeson, architect of Eureka, California, has joined the fighting forces of the United States, having enlisted in the Thirty-Third Regiment, U. S. Engineers. Mr. Georgeson is a son of Mr. and Mrs. F. W. Georgeson of Eureka. He has directed some important engineering and architectural work in Humboldt county.

OFFICE AND SALESROOMS, PLANT RUBBER AND ASBESTOS WORKS

STOCKROOMS, PLANT RUBBER AND ASBESTOS WORKS



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Mr. James I. Krueger recently placed on display at the Builders' Industrial Association, 110 Jessie street, San Francisco, a full line of Eclipse specialties for Vacuum and Vapor Steam Heating, as well as a full line used in power plants.

The line formerly was known as "The Old John Davis and Hughson Steam Specialty Company."

The Illinois Engineering Company has taken over these two concerns and is putting the goods on the market under the name of "Eclipse Steam Specialties." They have been in use over 30 years in public and private buildings scattered throughout the United States and Canada.

The U. S. Government is filling a big portion of its requirements with Eclipse Specialties. Quite a number of the ships now being constructed here are using Eclipse Specialties in connection with their boiler equipment, including the new concrete vessel, "Faith," illustrated elsewhere in this issue.

Glidden Company Absorbs Whittier Coburn Company

The Whittier Coburn Company, one of the oldest paint and varnish houses in California has been absorbed by the Glidden Company of Cleveland, O., and the business will hereafter be conducted as the Whittier Coburn Branch of the Glidden Company. All the known brands of paints, lubricating oils and varnishes will be continued, and added to as occasion demands. The Glidden Company of California will be incorporated to handle the Coast business.

The extensive advertising campaign conducted by the Glidden Company will be continued, and their well known products, such as Jap-A-Lac and the Automobile finishes will be handled by the Whittier Coburn Company representatives as heretofore.

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Direct Branch Office for Fenestra Steel Sash

The Detroit Steel Products Company of Detroit, Mich., has established a San Francisco branch sales office and in the future all business will be handled through this office. Mr. Henry R. Clark and Mr. A. H. Meyn are in charge of the sales end, while Mr. R. D. Van Dyke is the engineer. The offices are at 68 Post street, the new telephone number being Sutter 1250. The following announcement has been sent to architects, engineers and others interested in the well-known Fenestra line:

It is the policy of this company in important distributing centers to maintain direct company branch offices for the exclusive distribution of "Fenestra."

While we have had an office in San Francisco for the past two years, it has been for the purpose of general supervision of all Coast agencies.

Arrangements have recently been completed to broaden our local activities through the establishment of the San Francisco Branch Sales Office, which is now organized for complete Fenestra service.

The Fenestra Construction Company—our local field organization—specializes in the erection of Fenestra, thereby assuring engineers and owners correct installation at reasonable cost.

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DETROIT STEEL PRODUCTS COMPANY,
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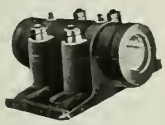
Plans Being Prepared

Mr. H. G. Simpson, 110 Sutter street, San Francisco, is preparing plans for several attractive English homes to be erected in the Lakeside Highlands District, Oakland, for the Walter H. Leimert Company.



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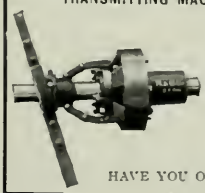

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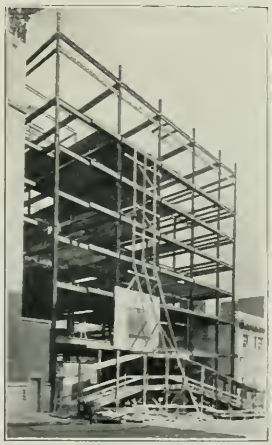

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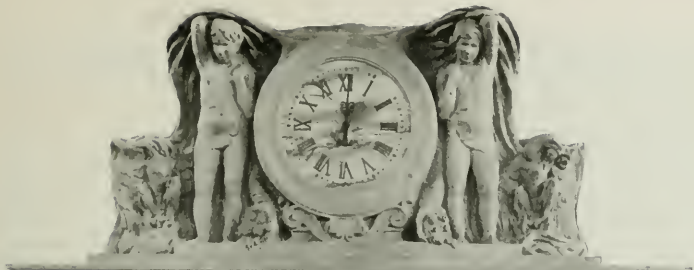

THE ARCHITECT & ENGINEER

VOL. LIII. OF CALIFORNIA No. 2

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Published Monthly at 626-627 Foxcroft Building, San Francisco, in the interest of

ARCHITECTS, STRUCTURAL ENGINEERS, CONTRACTORS AND THE ALLIED TRADES OF THE PACIFIC COAST

Yearly Subscription $1.50
Single Copy, 25 cents

Entered at San Francisco Post Office as Second Class Matter

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FROM WEST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CAL. WILLIS POLK & CO., ARCHITECTS

Frontispiece
The Architect and Engineer
of California
for May, 1918

THE
ARCHITECT
AND
ENGINEER
OF CALIFORNIA

MAY, 1918 Vol. LIII. Number 2

The Blaney Villa at Saratoga, Willis Polk, Architect

By B. J. S. CAHILL, F. R. G. S.

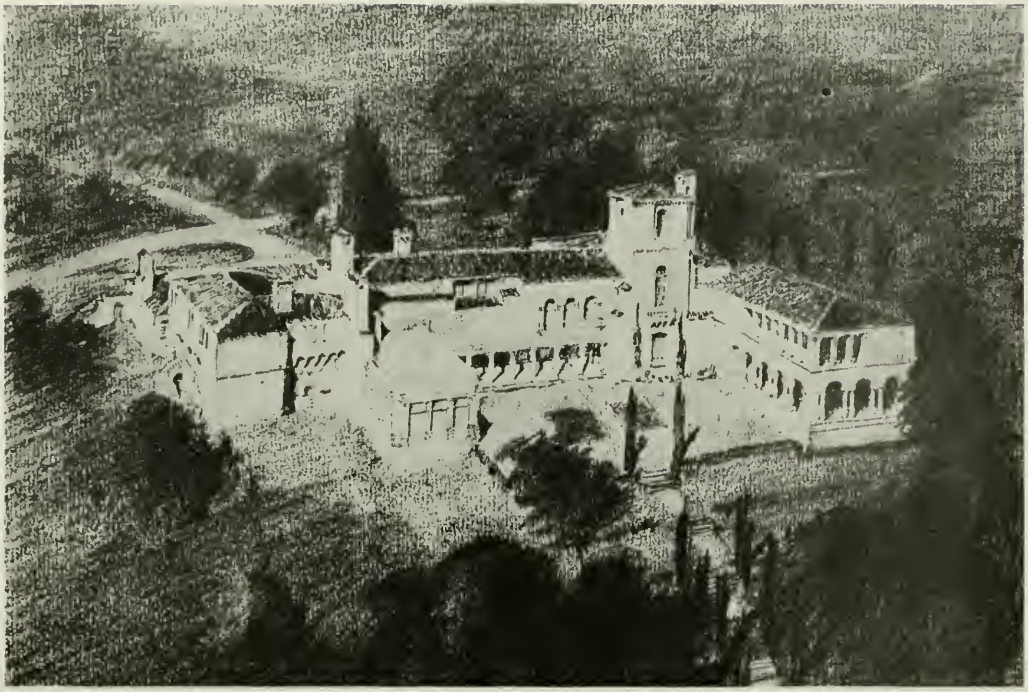
THE reader may recall a famous poem beginning "Flower in the crannied wall"; also Wordsworth's scorn for the man to whom a wayside flower was "just a yellow primrose, nothing more!" To many the rambling residence illustrated in the following pages will pass for just a country home—beautiful in its setting, picturesque, original, and full of charm—but just a country home, and nothing more. But there is very much more. To begin with, on closer inspection it proves to be a rare orchid rather than a common primrose. And the closer you study it the denser will be the swarm of ideas that crowd upon you as you note the surprises, the novelties, the niceties, and the subtleties that arrest your attention at every turn.

In biology it is the abnormal type, the lusus naturae, that arrests scientific attention and leads to those profound generalizations that in the end reveal some new hidden law underlying the rest of creation that is normal and commonplace.

The unusual character of this remarkable example of house architecture provokes inquiries along innumerable lines of thought radiating in all directions. In fact, if we choose to follow up these various leads and avenues we shall find ourselves covering the whole domain of art and architecture down to its obscurist origins. In a sense, of course, this might hold in the close contemplation of any wayside building or "flower in the crannied wall," but there are reasons why this particular structure is conspicuously worthy of analysis.

In the first place, its designer, Mr. Willis Polk, is an architect of very unusual endowments and immense and flaming zeal. A prodigy from his youth, he could use a "T" square before he could read or write—and at an age when some of us were painfully acquiring the academic rudiments of our craft and others had never even seen a plan the boy Willis knew how to draw the plans, make full-sized working details and spirited per-

PUBLISHER'S NOTE.—Acknowledgment is made to the Architectural Record for the loan of a number of the illustrations accompanying this article. Photos by Francis Bruguiere.



VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
WILLIS POLK & CO., ARCHITECTS

Drawing by
Harrison Clarke

spectives necessary to present and construct any ordinary country building. Equipped with this practical and precocious facility, he soon absorbed all that several of the leading architects of the land could teach him and finally became local manager for the most prosperous firm this side of the Alleghanies—Daniel H. Burnham & Co. of Chicago.

His own professional career has been rapid and sensational. He has run the whole gamut of architectural practice from sketches to skyscrapers and achieved conspicuous distinction in doing both and in every achievement in between. The utterly ridiculous but all too prevalent notion that because a man has creative talent he is therefore lacking in business ability has seldom been exploded with a louder noise than by the firm of Willis Polk & Company when they put up the Insurance Exchange and Hobart building on a record-time schedule never before even attempted in San Francisco.

With extraordinary facility in expressing his ideas and long and intense experience in realizing them, it follows that Mr. Polk is able to impress his ardent personality on his output to a degree far in excess of the average architect. With little or no academic training as we now understand it, he has taken nothing for granted and done nothing perfunctorily. In solving every problem he has had to rely on his practical experience, his natural talents and a remarkable faculty for sensing the drift of the current architecture of the country almost before it gets recorded in photographs.

This may perhaps be better expressed by saying that, having a mind not loaded with too much teaching and being "up to the chin" in the problems of the hour, he may leap to solutions before others have reached them and so be a participator in and creator of new drifts rather than merely quick to adopt them. Anyway, he arrives by intuition rather than by logic or scholarship.

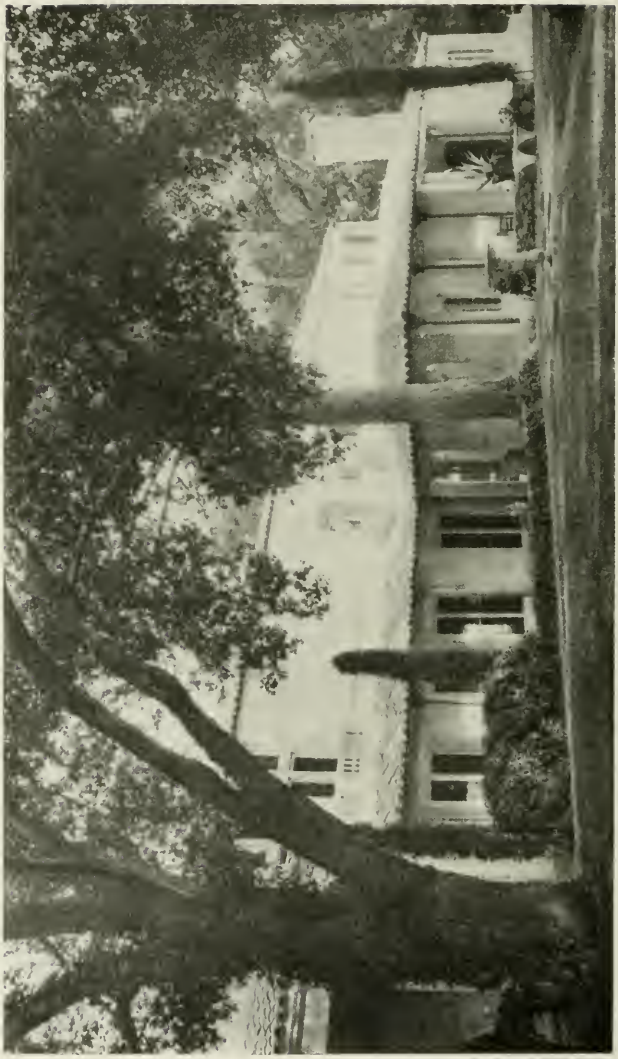
"There are nine and forty ways of constructing tribal lays,
And every single one of them is right,"

says Kipling, and a constructive imagination can weave great and glowing fabrics of fancy from the slenderest threads of fact. The architect who can elaborate a Gothic Reredos* from a hint of tracery on a piece of hardware does not need much learning.

By all of which I want to make clear that any work from the hand of Willis Polk is so very thoroughly the expression of sheer thought and feeling that it should be regarded somewhat as we regard a product of nature—something inevitable, not so much to be criticised as to be explained. After all, the processes of Art are merely an extension of the processes of Nature, as though creation were beginning all over again on a new plane—that of human in place of divine intelligence. Any real work of creative art indeed demands this attitude. The only qualification we ask in assuming it is that the creation in question be the free, untrammeled and full expression of the inner spirit, without compromise or slacking. This condition in various degrees exists in all of us, but only in a rare few is the flow of spirit copious and unimpeded enough. It is as though we were all molds for the turning out of some divine idea great or small. But our imperfections and limitations impede the flow of the divine alloy, and most of our output, like poor castings, are fit only for the slag heap.

In considering the Blaney villa we shall then regard it as the first-class product of a first-class mind because we have noted the long foreground and preparation behind it, and we might note further that the

* St. Luke's Church, Van Ness and Clay—since destroyed in the fire of 1906.



GARDEN VIEW, VILLA OF MR. CHARLES
D. BLANEY, SARATOGA. WILLIS
POLK & COMPANY, ARCHITECTS

design dates from the third or final period of creative effort. The first period or manner invariably echoes the school training, in the second the designer gets into his stride and establishes his own individuality. The third manner always shows a tendency to reach beyond into untried fields. The artist grows tired of recognized forms and strives to express ideas almost beyond the medium of his craft or else he harks back to the primal trail of things. He is passing beyond the violet ray. The result is sometimes baffling and obscure. It is obviously in this mood that the Blaney house was conceived. It is saturated with subtleties, novelties, whimsicalities, even, that transcend the analysis of ordinary criticism.

We shall therefore have to apply rather unusual methods in generalizing as to the genesis of this remarkable plan; but not in the least as we suppose the architect reasoned. We hold that its real development was not a matter of the deliberate will, but a sub-conscious process calling up deep-rooted and abysmal origins on which we shall attempt to throw a little light.

If the reader will turn to the plans he will see at once that house and grounds are developed on one major axis, but without formal symmetry—only a general balance of mass, the greater spread on the left side being compensated for by the greater height, including the tower, on the right side. There are several minor axes, however, upon which are built symmetrical episodes, but which are so little obvious that the author has seen fit to indicate them with dotted lines.

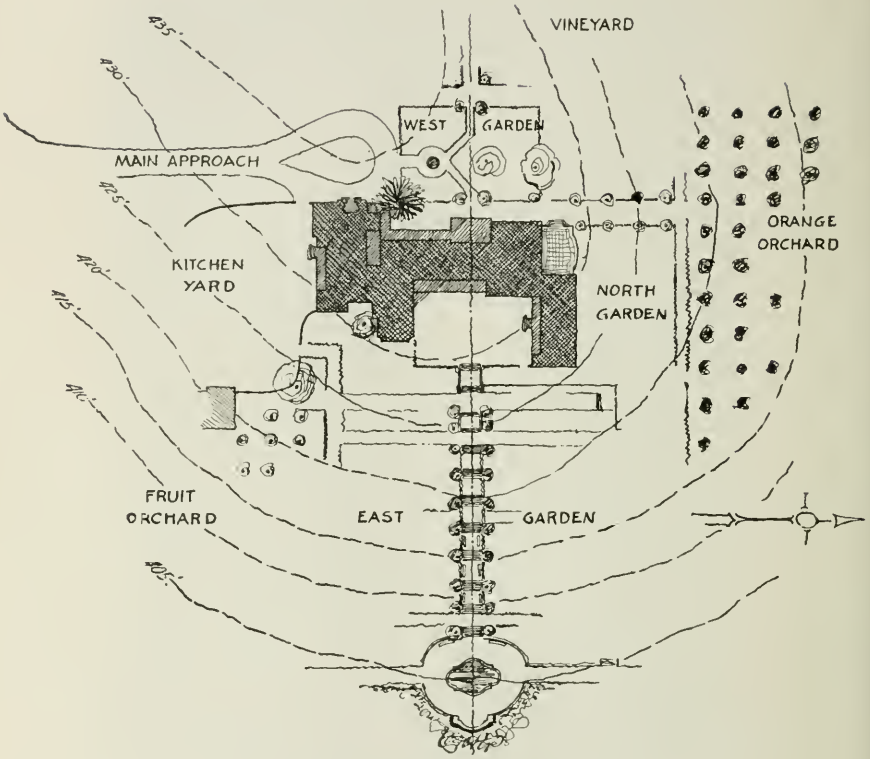
The next feature to note is that there is no bold internal vascular circulation linking the living rooms together in one suite. The circulation is constricted and external, somewhat in the style of a medieval castle or fifteenth century manor house, this effect being heightened by odd thicknesses of wall and random irregularities of plan that suggest the feudal stronghold for which the original owner has obtained "a license to crenellate," and a subsequent tenant has had the good sense to renovate. The notion that the house has been added to cannot be escaped and it is just as apparent that new wings or additions can be added. This point is important.

Now all this is so much at variance with every-day practice and school tradition that we are instantly puzzled. At first glance, indeed, at the sketch plan, rather crudely drawn, with obvious mistakes and clumsy amateurish printing, it seems the work of a beginner—rooms and passages, closets and stairs being added to one another apparently without method or end. Indeed, this plan would send the average atelier patron into a spasm. In essence, in fact and in presentation it goes dead in the teeth of all latter-day teachings. Hence its compelling interest.

Yet in the fundamental nature of things this plan is right to the core of it, just as right as the most symmetrical, clear-cut, opened-up Frenchiest picture plan that could possibly be rendered. I shall attempt to show why.

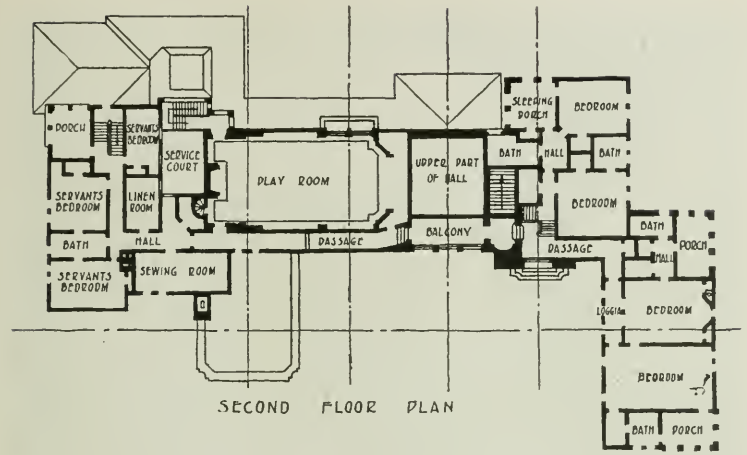
* * * * *

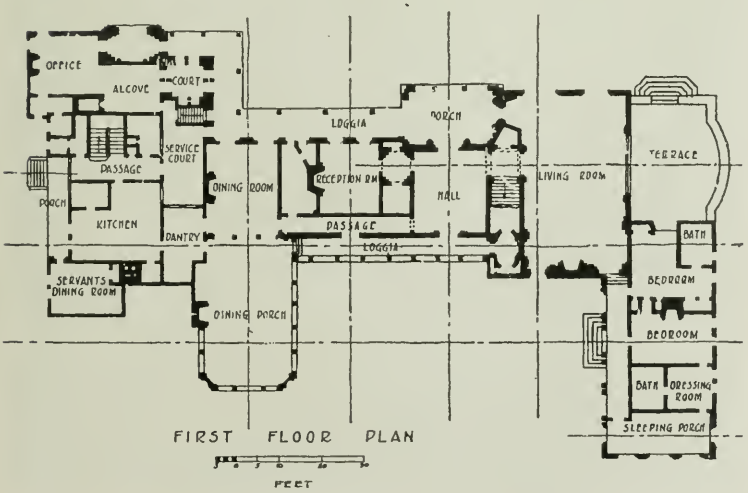
In the great fire of 1906 a large iron box containing 54 volumes of MSS., the labor of ten years, was destroyed, with all its contents, in about ten minutes. These volumes contained notes, data and drawings for a work of monumental scope, whose title might have been "A Universal Morphology or the Philosophy of Form." Its purpose was to reveal the underlying principles and formulate the laws governing "form" in the works of nature and the works of man; for the same laws govern both.



GROUND PLAN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
WILLIS POLK & CO., ARCHITECTS

It included natural form in astronomical, crystalline and organic matter and artificial form in weapons, tools, machines, instruments, art and architecture, including the growth of cities and even the shape of the continents on the surface of our own and other worlds. The outlines of such a work may yet be undertaken. Ultimately it is sure to be developed among the sciences of the future, which will aim at co-ordination and synthesis instead of detail and analysis. At present the subject has been but briefly touched on from time to time by such men as Aristotle, Leonardo, Swedenborg, Goethe, Herbert Spencer, Ruskin and Thoreau, and of course by many less celebrated thinkers.





FLOOR PLANS, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
WILLIS POLK & CO., ARCHITECTS

PORCH AT MAIN ENTRANCE, FROM WEST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

From this nebulous mass of research and speculation above indicated a few universal laws have revealed themselves and become detached and definable.

One of them not hitherto put into print has direct bearing on the plan of this fascinating villa, so different from what is being done and yet, as I claim, so absolutely in harmony with the laws of esthetics when studied from a long-distance philosophic viewpoint.

In a very condensed form the thesis runs about as follows: The basis of all form is symmetry. First universal symmetry about a point as in a globe or circle, later becoming a square or polygon in section. Stars, planets, atoms, crystals, raindrops, snowflakes, and cells of petroplasm and protoplasm come under this head. The globular outline, circular in section, continues to dominate organic form in most flowers, buds, fruits, seeds, bulbs and vegetables. Following the same series in the arts and architecture, we find primitive weapons and pottery globular long before the turning wheel was invented. The first dwellings of earliest Egypt were circular mud and wattle huts, still found among primitive savages. The square hut or tomb, which we take for granted, was in its day an invention of extraordinary originality. Of this type in architecture—symmetry about a point—we have all types of circular or polygonal buildings, from Stonehenge to the St. Peters of Michael Angelo—from the Pyramids and the great Mausoleum, including nearly all monuments, obelisks and tombs built ever since, even down to the home of the A. I. A. in Washington!

Now, to keep on following "form" as developed by Nature, we come from the crystalline or inorganic world to the two great branches of the organic world—animals and plants. The form of all moving animals is based on exterior symmetry or likeness from side to side of one median plane and variety or contrast from end to end. Each individual is complete, changeless and detached. You can not add parts to an animal organism without creating monstrosity nor take parts away without inflicting mutilation. Animal forms, moreover, are compact in mass, with large hollow divisions and comparatively small protuberances, while their vital sap circulates freely well in the depths of each organism.

Plant forms, on the other hand, are based on balance rather than symmetry from side to side, the main axis being always in the direction of growth. The axes are many instead of one and they tend to be at right angles to one another. Variety from end to end is of mass or quantity rather than detail or quality. Each individual is incomplete, ever changing and attached. You can graft onto a vegetable organism or prune away with advantage and improvement. Plant forms, moreover, are diffuse in mass, with small hollow divisions and large protuberances, while the vital sap circulates in constricted passages near the surface of each organism.

Before continuing the argument, I must here relate an interesting incident. After completing this last paragraph, I had occasion to enter a book store here in Oakland, where I picked up a little volume on "Architecture" by Prof. W. R. Lethaby. Almost the first thing I read was the following remarkable sentence on page 248: "Now that all the styles on earth have been surveyed and accounted for historically, what is wanted is a new type of classification by essential differences of structure—a new science of building morphology." No words could more aptly describe just exactly what I started out to do 30 years ago, which now for the first time I am trying to explain very briefly in these columns of The Archi-

WEST LOGGIA, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
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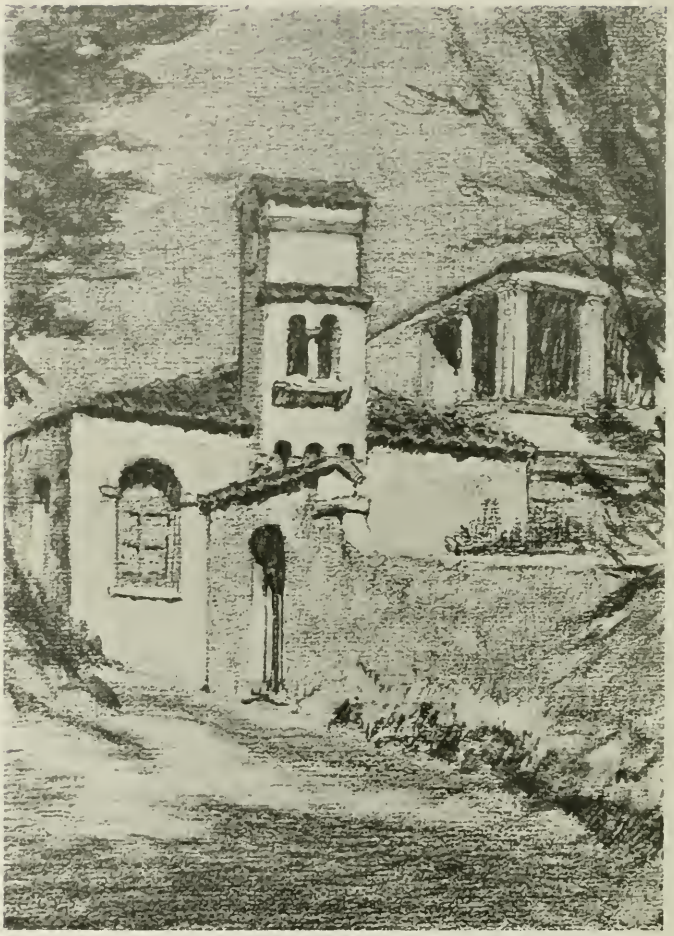
LIVING ROOM TERRACE, FROM NORTH GARDEN—VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS



Drawing by
Harrison Clarke

GATEWAY FROM WEST GARDEN TO KITCHEN YARD, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

GATEWAY FROM WEST GARDEN TO KITCHEN YARD, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

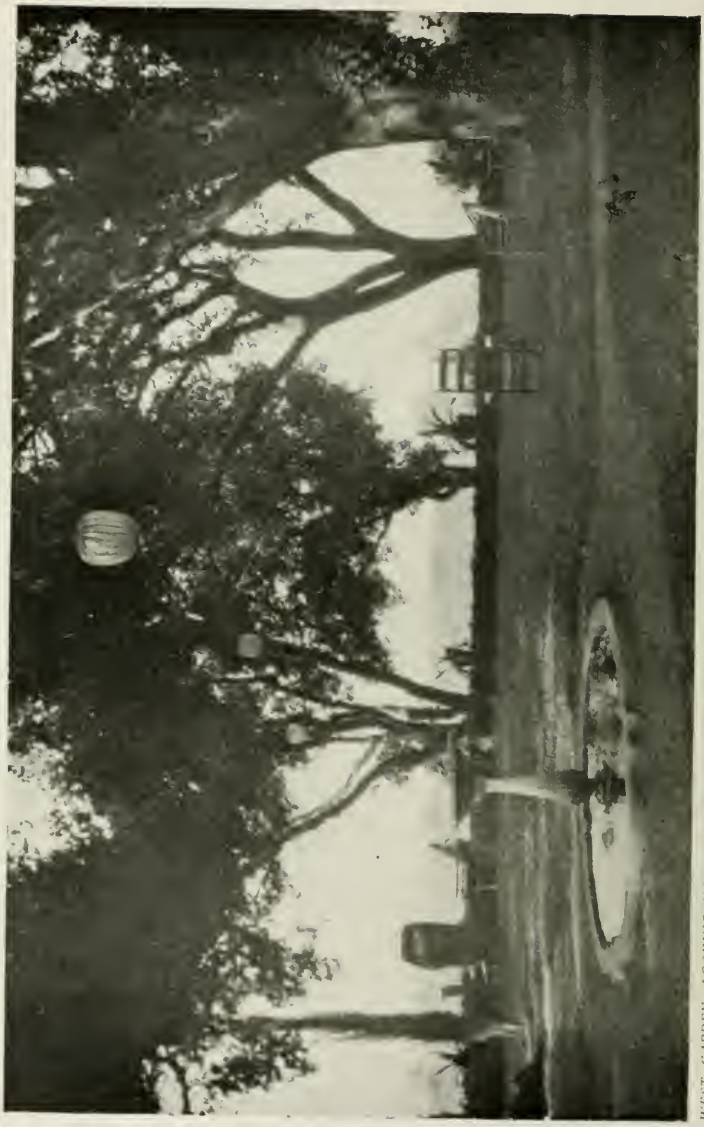
GATEWAY FROM KITCHEN YARD TO WEST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

VISTA FROM HOUSE TOWARD POOL AT EDGE OF EAST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

Drawing by
Harrison Clarke

VIEW FROM EAST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

VIEW FROM EAST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS



WEST GARDEN, LOOKING NORTH, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

J. H. P. Atkins, and Mrs. Blaney, Landscape Architects

KITCHEN ENTRANCE, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

EXTERIOR ENTRANCE TO PLAY ROOM FOR NEIGHBORHOOD CHILDREN FROM WEST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

ANOTHER VIEW OF EXTERIOR TO PLAY ROOM FOR NEIGHBORHOOD CHILDREN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

LOGGIA AT MAIN ENTRANCE AND TOWER AS SEEN FROM WEST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

EAST LOGGIA, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
WILLIS POLK & CO., ARCHITECTS

GATEWAY FROM KITCHEN YARD TO EAST GARDEN, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

WEST LOGGIA—AN INTIMATE VIEW (NOTE DIVERSITY OF DETAIL), VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA. WILLIS POLK & CO., ARCHITECTS

WEST LOGGIA, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
Willis Polk & Co., Architects

WELL COURT IN WEST LOGGIA

FROM THE BELVEDERE, LOOKING SOUTH OVER THE ROOF

tect and Engineer. The reader will have guessed by this time the main idea. The works of man repeat the processes of the works of Nature and the organic creations of man's ingenuity will also group themselves along the three avenues of organic growth—crystalline, animal or vegetal.

All the formal self-consciously designed buildings of the world roughly styled classic follow the animalistic form, symmetry each side of a single axis—variety of form and function from end to end. Millions of structures throughout the world can be instantly classified in this great division.

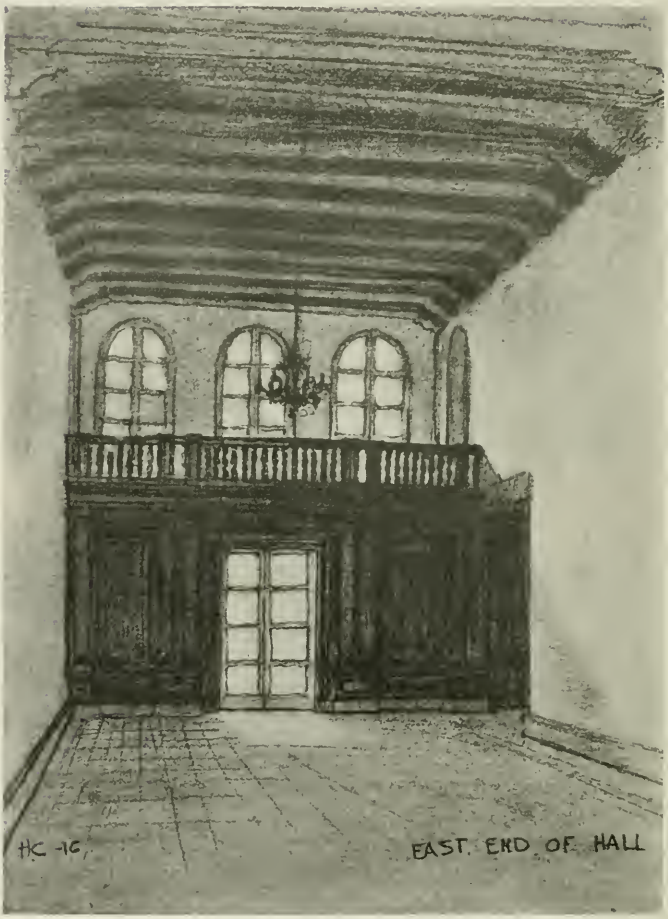
Like animals, they can not be added to nor cut without disaster. If the interior symmetry is not perfect, heart and liver being lob-sided, no difference is seen in the outer form, just as a Beaux Arts "projet" will show different offices placed in perfectly similar pavilions, each side of a central axis. The sense of detachability is strong in this type of formal building. In their supreme expression they are always set on a platform or stylobate, with free and open approaches. They would, moreover, fit on one plane as well as on another.

On the other hand, all the informal "unconscious" buildings that are not planned but "grow," which are not classic (in the sense that Amiens Cathedral is a classic type of Gothic) follow the vegetal system. This group includes all structures lacking strict integral symmetry but possessing a balance of dependent and lateral symmetries—like a tree or creeper. In this group, far less known to the professional architect where school traditions prevail, will come the farm houses and convents, villas and castles, cottages and citadels, that grow out of the soil, so to speak, and were built by primitive communities, unlettered men, cultivators, soldiers. The type is expressed by a tree or shrub. It obeys the law of vegetable and not animal forms.

The Blaney house is, barring the excessive self-consciousness underlying its naif unsophistication, a splendid latter-day example of the vegetal type of building. Its prototype and symbol being a tree—say a Scotch fir on a tall trunk. Vegetable forms are extended widely into space and of course rooted in the soil. And this block plan has all the qualities of a tree, is in fact the diagram of a tree.

The main axis or trunk rooted in the moisture of the pond rises straight and high and then near the top splits into several other branches, the parallel axes, as shown on the plan, with other lateral ones at right angles. It is to be remarked again that the draughtsman has gone out of his way to indicate these intersecting axes as though conscious that the building had so little symmetry that what there was of it should not pass unnoticed. But of compact and rigid animal symmetry there is none; only the irregular balance of mass that gives picturesque elegance to a tall wind-stressed pine tree.

As a matter of fact, this plan is a compendium of most of the elements that went to make up a medieval dwelling, with certain complicated and contradictory features that will be taken up later on. It has reminiscences of the castle in its look-out, barbican and well shaft, of the manor house in its lofty hall, gallery and secret door, of the farm house in its extended annexes, outside staircase and walled yards. The arrangement of living rooms in the center, with the family on the main floor and the servants' quarters at the opposite end, is essentially medieval. And so, too, are the rooms strung together and connected from the outside rather than the inside. For this is the method of all rural building as distinguished from urbane ones the wide world over. To this day farm houses, when really



Drawing by
Harrison Clarke

INTERIOR, VILLA OF MR. CHARLES D. BLANEY, SARATOGA, CALIFORNIA
WILLIS POLK & CO., ARCHITECTS

the growth of the soil, consist of rooms added to rooms and connected with an outside porch or portico. Another manorial feature is seen in the massive and conspicuous chimneys.

The architectural reader may not readily recall plans of this type for the very simple reason that they do not readily get into pictorial form. They did not begin on paper and to paper they do not readily return, as we say of the dust. None the less, this type of building is as universal as the forest which grew and was not first conceived like animals.

In scientific language, animal organisms are wholly integrated—that is to say, each part bears a definite and rigid relation to the whole, is, in a word, subordinated. And subordination of parts is the ruling principle of classic or animalistic design. In vegetable forms there is accretion of parts, but not subordination. A tree or plant has its branches or leaves integrated, it is true, but they are added to one another rather than combined. And note how this Blaney house plan is lacking in subordination of parts. This is by no means mentioned as a fault. On the contrary, it is a most interesting and convincing proof that this plan belongs fundamentally to the vegetal rather than the animalistic type of form. And, of course, we mean highly developed form at the end of long evolution. Integration of form units is essentially a later development than mere agglomeration.

Now, just as one bough of a tree is very like another, both in mass and form, so do the ramifications of this house tend to be similar to each other both in spread and in bulk. The circulation in the passages and porches is constricted, and on the outside, or near the outside, just as in a tree the sap circulation is carried in small passages right under the bark.

Again plants live upon air far more than animals. Every leaf is a lung. And now note how this type of house is also highly articulated and spreading like a tree and observe how much of the outer atmosphere it invites and embraces in its own bulk in its porches, porticos, courts and belvederes. Like a tree also, it is part of and rooted in the soil and surroundings in an intimate manner quite unsuitable and undesirable in the formal classic animal type of house. These characteristics as noted above are universal in primitive and bucolic construction and just as in the world at large the vegetable forms precede the animal, consequently they are vastly more bulky and extensive over the planet than animal forms. The layout of the Blaney house is therefore a reversion to a type far more ancient and universal than the more highly developed and integrated plans of the schools, and it is important to note, in passing, that the irregular unsymmetrical floralistic plan is better adapted for home purposes in the country than the regular symmetrical faunalistic type. The most attractive homes the world over instinctively shape themselves on the former and not the latter principle.

These generalizations are of course very imperfectly and sketchily stated. It would take a treatise to expound them fully.

* * * * *

Coming down from these universal and underlying principles, let us consider another phase of the evolution of "form" in architecture. And here again I will draw from another chapter of the lost Morphology.

I know of no building that is a more interesting blend of two great principles in art growth which of course exactly parallel similar laws in nature. These laws of nature have only recently been discovered, and it is therefore unlikely that their application to architecture has been often if ever realized before.

If we take a ride into Livermore valley through Niles Canyon, we can see fine illustrations of this law. First, if we leave the car on the roadside and wander down the canyon toward the creek bed, we can find without much trouble a vivid green wiry-looking shrub popularly known as "horse tail." This lowly wayside weed may well excite our interest. It is the last remaining representative of a titanic verdure that once overran the earth in paleozoic times; the interminable forests of the carboniferous epoch, whose remains now have become pressed into seams of coal. Thus the mightiest vegetation that was ever on the earth has finally degenerated to a wayside weed. But while the giant cryptogamia of this epoch were in their glory some of the weeds of that period—common lowly grasses have now been developed into one of the most useful and honored plants of the planet. As we leave the shaded canyon and emerge into the sunlit plains, we come right upon great meadows of it—the king product of the fields—wheat!

In other words, the sovereign plants of one epoch become the weeds of the next and vice versa. And in any garden or farm the most valued products of the soil will be a blend of rare and farfetched exotics that have been made hardy and common, like peaches and oranges; and common wayside plants that have been lifted by cultivation into the plane of usefulness and beauty, like asparagus and lilies.

In architecture we find growths that run equally to extremes. It is a long way, indeed, from the temples of the gods and the palaces of kings to the barns and cottages of the common people. Yet the whole of civilization consists in the main of a long, gradual process by which in the end palaces are provided for the people and cottages made fit for kings. And so clear-cut are these two processes that it is possible and in fact easy to cast one's eye over the exterior or interior of any modern building and to pick out instantly the parts that are "degraded" remnants of palace architecture and the parts that are glorified developments of cottage architecture.

Or, for that matter, we can "place" a whole structure in either group. Here is a square-topped, rustic-sided, mill-trimmed house, with large window lights, high ceilings, symmetrical as to inside plan and shiny as to outside paint; all earmarks of showy palatial origin. Next door is a high-pitched, broken skyline shingled structure without ornament mouldings or paint, irregular in plan, with low ceilings and small window panes—a beautified barn!

The use of expensive materials, like cut stone or marble, all "orders" formal and molded work, high ceilings, symmetrical layout and large windows are hold-overs from palace architecture, imitated, diluted, copied and cheapened DOWN through the whole community. On the other hand, cheap materials, shingles, bricks, stucco, rough stone, wood work—informal and low rooms, irregular plan and small windows are perpetuations of cottage and farm house conditions that have been improved and developed UP through the whole community.

On the one hand we have the appeal of magnificence and grandeur of all formal and imposing structures that are costly and new. On the other we have the quality of the picturesque, comfort, cosiness and "homeyness" of buildings that are inexpensive and old and make much wider and more intimate appeal than the other. And for good reasons. The vast bulk of the human race has dwelt in cottages and not in castles. Twenty generations back each one of us has over one million grandparents, increasing geometrically as you recede into the past. That is why we love the low ceiling, the cosy home to live in, however much we may admire the mansion to look at. Let the bonanza kings build their palatial residences, we

who can afford the aristocrat's privilege of being natural prefer to live in a home. None the less there is that in us which insists in a touch of formality, of grandeur even, to match certain dignified moods and moments of life that vary the democratic humdrum. Jeffersonian simplicity in one's home does not preclude a Jeffersonian colonnade on one's house.

Now the Blaney villa seems to the writer a most happy compromise and blend of the cross tendencies in life and in architecture we have just noted. Here we see a sympathy with simple, ordinary materials, stucco and common clay, both, however, rendered romantic and beautiful by the hand of art. And here, too, we find a few features of more formal work; just an episode or two of magnificence, that give a tone and a touch of courtliness, as if also in sympathy with what is high-bred and aristocratic.

The entrance portico, for example, is a complete order in Italian Doric, palatial in form and spirit but executed in inexpensive cement. The entablature over this triple opening is complete and delicate in detail, but without pediment or parapet. It runs its brief course straight across and dies into a plain wall at each side and henceforth we see no more of it anywhere in the building. A hipped roof covers it, tiles of which hang over the corona in a delightfully irregular way as though to assure us that this brief eruption of formal grandeur is not to be taken too seriously. We are welcomed to this home with a stately bow, the formality of which is soon forgotten in the warm hand-shake that follows. The rest of the porch to which you naturally wander when the introduction is over is lower and shallower, its roof carried on hand-hewn posts with carved bolster caps and bearing on adze marked honest timber.

Lest the dripping from the overhanging tiles should incommode the visitor, a small gutter is suspended from the frieze with quaint and charming candor which bespeaks the essence of consideration prevailing over the letter of mere form, dignity yielding to kindliness.

On the left of the main portico on the second floor a romantic belvedere with double arcaded openings exhibits another touch of formal architecture in the small columns and pilasters that carry the plain arches above and the balustrading in between. This balustrading appears again to the right of the main entrance, forming a window balcony to the big playroom, and again at the outside stone steps, where it tops the stair-well and ties together two pavilions of the building across the gap formed by the service court. In the patio to the east this balustrade reappears again with changed detail, however, on a projecting balcony at the big tower window. Here it is carried on deep stone corbels which in turn are repeated at the south of the dining porch to carry an extended wall forming a sewing room above. The effect of course is that of a machicoulis just where this device would be most effective over the entrance to the cellar and the store rooms.

The small columns and pilasters of the front sleeping porches are repeated with variations to form the porches or frame the fenestration of the wings that flank the patio, some being arcaded and some being squared. The window and gate heads of the southwest corner being elliptical, as in the northeast corner, yet having just that difference in detail and spirit which suggests so forcibly that these wings were added at different periods, is an ingenious and very interesting way of avoiding the tiresome tyranny of drawing board methods. The result is wonderfully consistent with this type of rather random and informal design.

The tower comes nearest to being a piece of pure symmetry anywhere on the exterior, but even this near-formalism is broken by the massive chimney of the living room, to which it is so interestingly united.

The chimneys throughout are numerous and have high pictorial value by reason of the way they have been thickened to act as vent shafts as well as flues, or for the mere joy of their mass and surface in giving variety and interest to the skyline.

On oddly fascinating brace of openings in the flank of one of them—the one which rises out of the Office, invites special attention. A small column does duty for a mullion dividing two narrow circular headed openings in front of which is a wide stone flower shelf carried on two wide apart brackets. In the drawing here shown the shelf quite visibly sags in the middle, but so does the actual shelf sag in the finished building! The result is quaint, pictorial and pleasing. Somehow it suggests not so much age and use as the fact that being a country villa it was built by rustics whose naif inaccuracies express admirably the bucolic spirit of the whole enterprise. In exactly the same spirit Beethoven in his pastoral symphony makes the bassoon player come in half a bar too soon, but as the scene depicted is a village dance the deliberate error is appropriate and amusing. At the first rehearsal of this movement we are told that the musician concerned attempted to correct what he took for an error, and I can easily believe that the mechanics concerned in making this "dippy" slab must have thought that the detailer was affected in the same way.

Another sample of formal work naively executed is found in the fascinating well-court whose twisted columns are surmounted by rather florid but obviously home-made capitals. At least that is the impression they created in me after a hasty glance.

These, then, in the main, are the only features recalling formal and palatial architecture on the outside, if we except the beautiful little balustraded terrace outside the living room. For the rest the entire exterior consists of absolutely plain walls with a sill course at each floor and a basement, where it extends from the hill, set on a bevelled offset. The walls at the skyline end squarely under the projecting tiles. But the plain surface has been minutely and affectionately studied. And nowhere does the real architect so reveal himself as in his love of a plain wall rightly proportioned and deftly contrasted with variegated fenestration. Now, a wall, to be attractive, must be something more than the abstraction of a vertical plane. It needs tone texture and variation, also, we must admit it, a touch of dilapidation, some patches of discoloration; some faults and inequalities of edge and arris. Just why a perfectly even, square, uniform, sharp-edged plane is an intolerable eyesore has never been satisfactorily explained. A perspective drawn with ruled lines is abhorrent to a sensitive eye, as is a too sharply focussed photograph. There is of course a psychological explanation. It is probably a matter of inherited memory. Imperfectly built, rough-hewn and weatherstained walls are infinitely more universal owing to the prolonged past of hand-wrought workmanship than the true and perfect work of modern and expensive mechanical processes. The appeal to the inherited familiarity with what is a little rough and irregular grips you instantaneously. One has only to recall the delightful impression created by an old Normandy farm house or the thick-walled wineries of Italy; the thatched dwellings of the South of England or the rock and plaster cottages of the North to realize the compelling charm of what is rough, weatherbeaten and ancient.

But it is indeed a sophisticated, a cunning and an ingenious thing to create picturesque irregularities by the very methods that made us forget them—the drawing board and the blue print! Not only are the walls of the Blaney villa wrought with deliberate blemishes of form and studied

variations of color in the pinkish drab of their shadow dappled surfaces, but the clay tiles are purposely burnt to different hues of purplish clinker and ochrish dun. Moreover, they are laid over one another at varying intervals and sometimes doubled and trebled so as to be wavy at the edges. Thus, in lieu of the stark diagonals of perfect and tiresome tiling we get a sense of age and romance in these crimped eaves that yields the full fascination of their far-off European originals. But not only are we reminded of the rough, primitive origins of the walls and roof, the wood columns of the porch are also rough hewn in effect by the use of artificial adze marks—not, of course, a new device, but one that is in spirit quite modern, especially when applied to material rather than to design. There are traces even in Alexandrian art of an artificial simulation of archaic forms, for then, as now, the charm of sincere simplicity, and fidelity always appeals to an age that is "overwise and overstale." Art starts all over again, as it were. The pre-Raphaelite movement in England is a more recent example. William Morris and Elbert Hubbard have worked on the same lines—back to the soil and to handicraft. Mission furniture and even the work of the futurists is nothing but an attempt to begin making furniture and pictures da capo—as though neither had ever been made before.

The same things occur in dress. Only a year ago the ladies were all wild about smocks and smocking. Smocks were worked in poplins and taffetas (as I understand it) and became all the mode. No better example could be given of the glorification of what is cheap and lowly. The ploughboy's shirt becomes a princeling's tunic or my lady's garden dress. This is an extraordinary metamorphosis to one who has seen an old country carter squelching his foul and smelly way in the sour mud of a barnyard and wearing the coarse, appropriate clothing for this menial task, the homespun smock. The "degradation" of lordly finery, on the other hand, is well illustrated in the cockade brass buttons and knee breeches of a plutocrat's footman—a remnant of once court finery now only fitting for flunkies. The swallow-tail evening garb is derived from court conditions that have been simplified and standardized for the plain citizens of a democracy.

In the interior of the Blaney villa we find repeated expressions of the same opposite tendencies: things of magnificent origin moderated for people of plain taste and things of lowly origin ennobled by refinement.

The large entrance hall (which, by the way, would look better were it longer) is pitched in a subdued key of grandeur which seems exactly appropriate. The walls are plain to austerity—but the floor is laid in rare and colored marbles, while the ceiling is carried on close-set beams corbelled at the ends and carved on the soffits. The wooden railed gallery and door screen, dark and delicate in detail, at the far end, contrasts finely with the pale stone doorway at the other end, framed in a complete columnar order of which no hint is conveyed on the sketch plan. The hall, of course, is lofty—reaching through two whole stories, and high up over the entablature of this vertical rectangle of pure architecture is set a large oval medallion in high relief—a Donatello, if I remember rightly. This entire end of the hall is the most chaste and exquisite feature of the whole interior. It might pass for an example of Italian renaissance in an art museum. There are other features of formal architecture in the living room whose serene proportions and soothing but elusive color is quieting as an anodyne.

The rest of the interior, with a few exceptions, is both in spirit and detail entirely of cottage origin, elaborated in the brick and faience of the dining room mantel and the wood work of the play room, but otherwise almost monastic in its severity. Indeed, as if to bear out our theory of origins, and

realizing that the plainest of door and window "trim" is a remnant of the architrave and cornice of palatial origin—even these have been omitted so that the plaster goes clear to the doors and windows, with merely a bead in place of the conventional casing.

The tower affords a fascinating lookout to the surrounding country and serves the exterior's rather sporadic composition as an admirable—an almost indispensable node of interest, to focus attention, like the spire of a fir tree—giving balance and unity to the mass below. Structurally speaking the tower is a piece of "scenery," being reared on a void and having no interior function or interior existence even, until it leaves the roof line. In other words, it is a piece of ornament—or a symbol and not a piece of structure and needs no more to be supported below except on its wholly visible side, than a pilaster needs to hold up anything except the false work of a frieze.

As I said at the beginning, there are quaint whimsicalities in this house and a humoresque feature can be found in the loges off the main hall where large panelled and molded doors open on to a small closet or a four-inch deep "cut-out" box.

Then again, the owner's sleeping quarters are reached through a secret door—apparently part of a book case set in the far corner of the living room. Here you descend some steps, not into a closed passage, but into an open porch with a drain in the floor lest you doubt your eyes.

In a land where country life is a summer and not a winter affair, as in England, this may be very sensible and sanitary. But even in stormy weather the notion of making a plunge into the cold and rain to get to your bedroom is not without interest—quite a jolly idea, in fact—another return to the primitive, just enough to remind you of the comforts we moderns enjoy but are too prone to take for granted.

The secret door is a make-believe stack of books, the titles being suggestive of the deception. The leather backs with names artfully embossed, are pasted on a wooden door and it is impossible to tell where the deception begins except to any one who should read the titles. They remind one of the burlesque library of Panurge, where most excellent jest is made of the ponderous metaphysical nothings of the casuists and schoolmen of that day. I present some of them in true Rabelaisian style, to wit:

The History of the Void.
Comedies of the Secret Door.
Unveiled Realms of Thought.
Guess Again, a novel in 3 vols.
The Life and Letters of a Fraud.
Where Nothing Begins.
The Way Out.
History of Blockheads.
Sealed Measures of Information.
The Perfect Attainment of Ignorance.
False but Fair.
Architecture, and Its Secrets Revealed.
Desperate Devices.
Journal of the Senate.
Proceedings of the American Institute of Architects.

The subtlety of the last two titles, the only ones that were not invented, will go to show how much more biting is the satire of fact than the satire of fiction.

* * * * *

The more obvious charms of this "ample villa bosomed deep in vines" can be readily appreciated in Mr. Bruguiere's telling photographs. The pastoral setting suggests the spirit of a Virgilian eclogue or an Horatian ode—the joys of the countryside as interpreted by the poet. It is in fact a poet's home—recalling the mellowed and classic scenes of Italy. The reader will note how closely in a few years more will be reproduced here a facsimile of the leafy vista that leads to the Villa d'Este, and how even now, the outlook from the front garden echoes the famed panorama of Rome so often pictured from the Pincian Hill.

But there still remains an elusive quality about this rare country place that neither plan, picture nor pen can fully express. And it is indeed marvellous that mere tiles, stucco, wood, and plaster can cast over one so compelling a spell. Perhaps it is its refreshing negation of all pomp and ostentation; perhaps it is the utter and absolute absence of anything banal or stupid. The whole pile is a challenge to your intelligence. It baffles one. I seem to get a hint of the master word or key in the big panelled door that leads nowhere—and the whole wing that has no visible door at all. Is this not symbolical of the spirit that would protest the solemnities and pomposities of life and poke fun at the too obvious false values that wealth and power so often induce. Is there not here a hint of that privilege of the rather sad and very wise to appear like Hamlet, a little mad, and behind the mask of an assumed motley to keep fools guessing? I may here be a victim of the pathetic fallacy and those who refuse to follow me may have clearer vision after all in seeing in this grouping of walls and roofs and rooms and porches—just a lovely villa, just that and nothing more.

* * *

Mr. Mullgardt Addresses Honolulu Assembly

THE projected calling of a Pan-Pacific Conference to meet in Hawaii, the establishment of a Pan-Pacific Commercial College in Honolulu and the project of a Pan-Pacific Peace Exposition in Honolulu, after the war is over, were the topics of discussion at a luncheon of the Pan-Pacific Union in the Laniakea Theatre, Honolulu, on May 3d.

The meeting was the largest and most interesting of any that has been held by the organization and, in the opinion of those present, as expressed by some of them afterwards, will lead to important results. It was the first of a series intended to lead up to the fulfillment of the projects mentioned.

Among the speakers was Mr. Louis C. Mullgardt, the San Francisco architect, who spoke as follows:

It is a great privilege to be able to say a few words in support of this movement, which has been instigated here in the Islands. It is a colossal undertaking, but it is necessary. It must be done. If you don't do it, someone else will, for it is inevitable. It seems logical that you here at the "Cross-Roads" of the Pacific should carry through as well as instigate this great work.

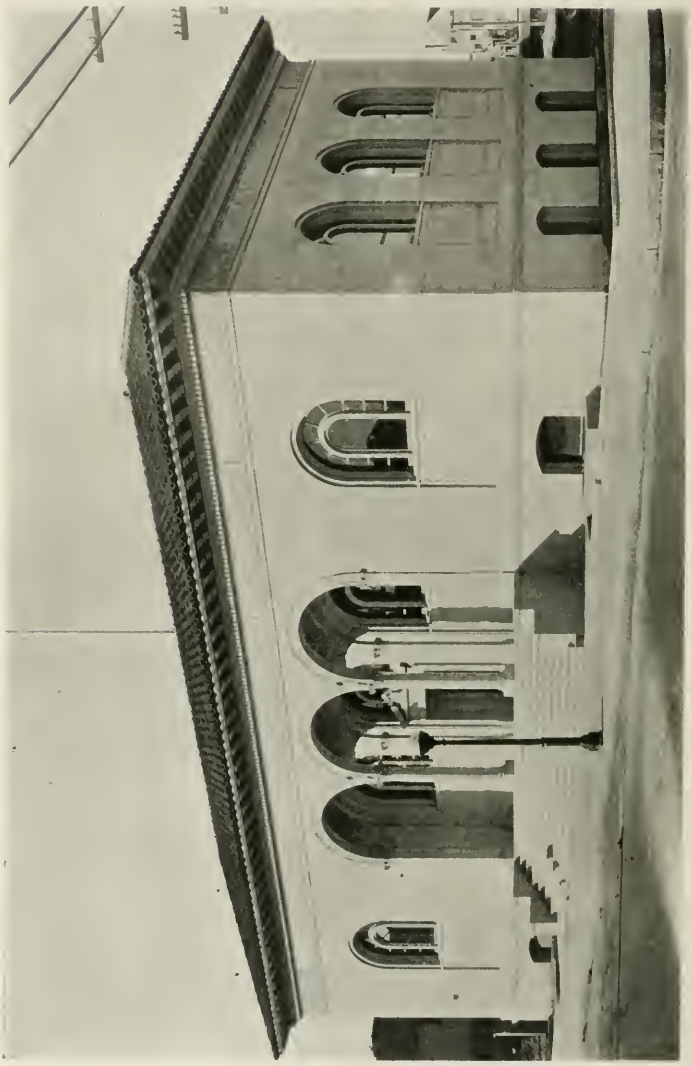
I am sure that Hawaii will profit by the experiences of peoples whose history is regretted. I am sure that we will profit by the conditions which exist in Europe, which should teach us that we can help ourselves best by helping others. It is an enormous movement, and one that wants to be undertaken with a great deal of care, so that the old mistakes won't be repeated. Kindliness towards others will serve us best. There is much that should not be endured. We should stop yellow journalism and slander. We should stop attacks on our neighbors. Slander never does good to anyone. Unkindliness causes anger, and then suspicion, and then—however well we might build, all things are destroyed in time of war. The things that are important, after all, are the things that come during peace.

I was asked to speak on architecture, but cannot at this time; I am too much interested in what is going on in this great movement. Forget the slanderer; he is always over-rated and over-valued. After this great war—which we are going to win—the world will be changed—it will be better, and this movement should be kept going.

* * *

Concrete Building with 1,800,000 Sq. Ft. Floor Area

Construction is well under way on what probably will be the largest office building in the world. The structure is being erected at Washington, D. C., and will house most of the offices of the War and Navy Department. It is of reinforced concrete, of the beam and girder type, and will be three stories in height, covering 1,800x560 feet. The total floor area will be 1,800,000 square feet. The building is to be completed within five months from the date of approval of foundation plans.



SUNSET CARNEGIE BRANCH LIBRARY,
SAN FRANCISCO, CALIFORNIA
G. ALBERT LANSBURGH, ARCHITECT

INTERIOR, SUNSET CARNEGIE LIBRARY, SAN FRANCISCO
G. Albert Lansburgh, Architect

The Sunset Branch Library, San Francisco

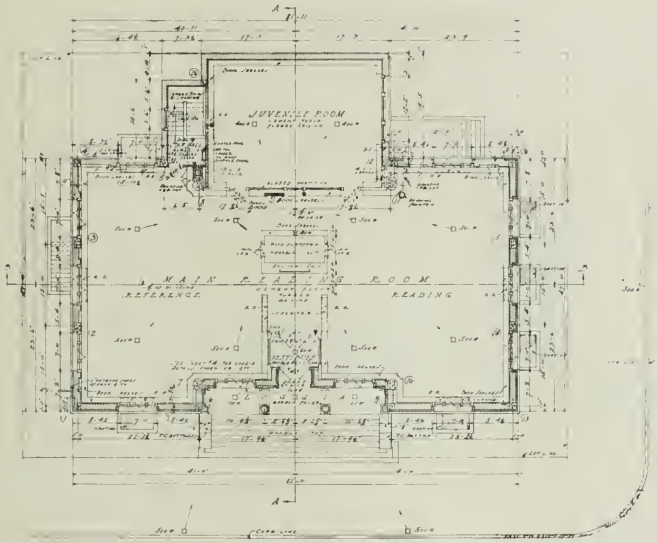
THE Sunset Branch Library in San Francisco is Italian in character. The building has two street facades which are faced with matt glazed terra cotta with ornamental frieze, terra cotta cornice with modillions, and red tile roof. The frieze contains an inscription giving the name of the branch, while tablets below the reading room windows give names of authors. A flight of nine steps in terrazzo leads up to the main entrance which is reached through a loggia on the long facade of the building. The loggia has terra cotta columns and ornamental arches.

The entrance doors lead through a vestibule into the main reading room and directly toward the delivery desk. Around the entire room are open book shelves 7 feet high, giving space for approximately 10,000 volumes, all directly accessible to the readers. The room is 44x79 feet in size with an average ceiling height of 19 feet. The walls above the book cases and the ceiling are plaster. The ceiling is ornamented in color. The windows are large and circular headed.

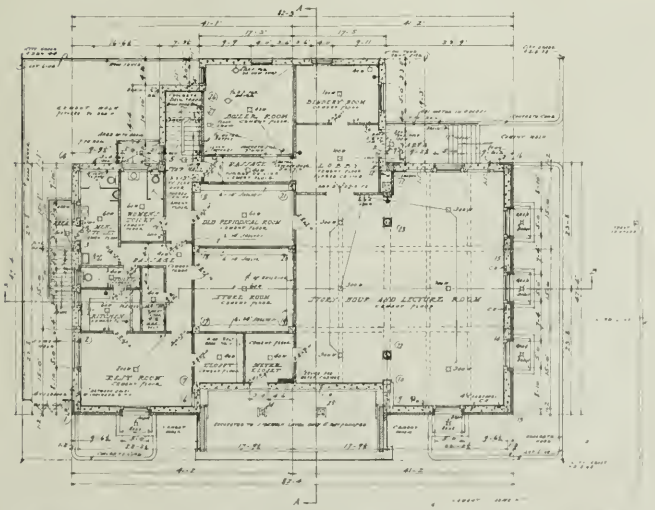
From the rear of the reading room, doors lead to the juvenile room, which is 24x32 feet in size, with book shelves same as in the reading room, simple plaster cornice and diffusing sash. This room is separated from the reading room by a glazed screen. Stairs lead from the reading room to the basement, which contains attendants' rest room with adjoining small kitchen and toilet; men's and women's toilets; store, bindery and boiler rooms; and a story hour and lecture room which can be reached directly from one of the streets as well as from the first floor.

The structure of the building is entirely of concrete except that the roof framing, which has concrete trusses and girders, has wood rafters.

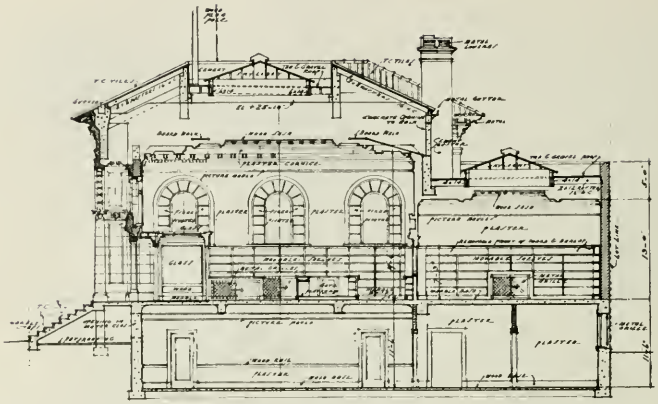
LOGGIA SUNSET CARNEGIE LIBRARY SAN FRANCISCO, CALIFORNIA. ALBERT LANSBURGH, ARCHITECT



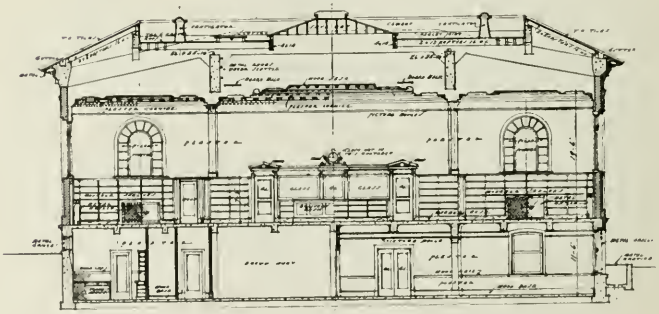
FIRST FLOOR PLAN, SUNSET CARNEGIE LIBRARY, SAN FRANCISCO



BASEMENT PLAN, SUNSET CARNEGIE LIBRARY, SAN FRANCISCO
G. Albert Lansburgh, Architect



CROSS SECTION, SUNSET CARNEGIE LIBRARY, SAN FRANCISCO



LONGITUDINAL SECTION, SUNSET CARNEGIE LIBRARY, SAN FRANCISCO
G. Albert Lansburgh, Architect

The walls are of brick faced on the two street sides with terra cotta and the balance cemented. All partitions are of wood studs and lath. The floors are cement finished except the vestibule, which is marble mosaic. The principal rooms have linoleum.

The heating is a low pressure oil burning gravity system with direct radiators. The radiators in the reading room are contained in recesses in the book cases and provided with grille faces.

The electric lighting is all direct. Eight large fixtures are suspended from points in the ceiling design of the main reading room. On the exterior of the building are three ornamental light standards, each provided with a 500-watt lamp and reflector, for the purpose of flooding the exterior of the building with electric light.

The building was designed by Mr. G. Albert Lansburgh of San Francisco and cost, completely equipped, approximately $44,000.

* * *

Streamline Buildings Next?

THE movement of the present day toward elimination of waste in building design—or, better said, the prevention of waste in planning and construction—follows the same tendency that is to be noted as the outcome of conditions in the past. Wars or other forces have called upon man for sacrifices which led ultimately to a mental exertion that produced great economies combined with greater efficiency.

"Befo' th' wah" between the North and South, in the olden golden gracious and spacious days, everything was free and easy, liberal and hospitable. After that war, things tightened up; and the buildings today are no more like those of the days of graciousness and spaciousness than buildings of the coming decades will be like those that were built in the last decade, in the matter of method, manner, quantities, bulk or detail. Prevention of waste—that is, consistent practice of the principle—should ultimately lead to undreamt of changes in forms of architectural design. Like all efforts to produce maximum effectiveness at minimum expenditure, this should in turn lead to the production of an art transcending all previous architectural efforts insofar as sheer cleanliness of line, perfect adaptation of means to end, and logical development of the problem, is concerned.

The streamline building is the next outcome!—Building Review, New Orleans.

* * *

Appeal to Architects for Y. M. C. A. Workers

An appeal has been made to the American Institute of Architects to lend assistance in recruiting seven hundred Y. M. C. A. secretaries for service in France and Italy. The work being done by the Y. M. C. A. with the American army in France has made such a favorable impression on the French and Italian military authorities that France has asked for 500 secretaries and Italy for 200 secretaries. Men of executive ability from 31 to 50 years of age who speak French or Italian, are desired; preferably men who learned the languages in France or Italy. Many architects, draftsmen and artists have studied abroad, especially in France and Italy, and speak one or both languages. Such men, if possessed of unwavering enthusiasm, can do splendid service with the allied armies in these countries. Mr. Henry F. Withey, secretary of the Southern California Chapter of the American Institute of Architects, 621 Exchange building, Los Angeles, has been asked to furnish the names of persons willing to undertake the Y. M. C. A. work in France or Italy to the secretary of the Institute.

MURAL—"THE KING OF THE GOLDEN RIVER" BY WILLIAM L. WOOLLETT
GRAUMAN'S THEATRE, LOS ANGELES A. C. MARTIN, ARCHITECT

A Dream Come True

By JO NEELY in The Graphic

"We are the music-makers,
And we are the dreamers of dreams,
Wandering by lone sea-breakers,
And sitting by desolate streams;
World-losers and world-forsakers,
On whom the pale moon gleams;
Yet we are the movers and shakers
Of the world forever it seems.

"We, in the ages lying
In the buried past of the earth,
Built Nineveh with our sighing,
And Babel itself with our mirth;
And o'erthrew them with prophesying
To the old of the new World's worth;
For each age is a dream that is dying
Or one that is coming to birth."

Music of the night, modeled by Wm. L. Woollett for Gladding, McBean & Co., contractors for terra cotta

AND full many a lovely dream must have died and, dying, breathed its spirit into "one that was coming to birth"; for it was builded from dreams, this wonderful new gift which has just come to our Angel City, must be quite clear even to the "unanointed" in art, and as we gaze at the varied beauties of the New Grauman Theater at Third and Broadway we acclaim with one accord, "It was a dream worth building."

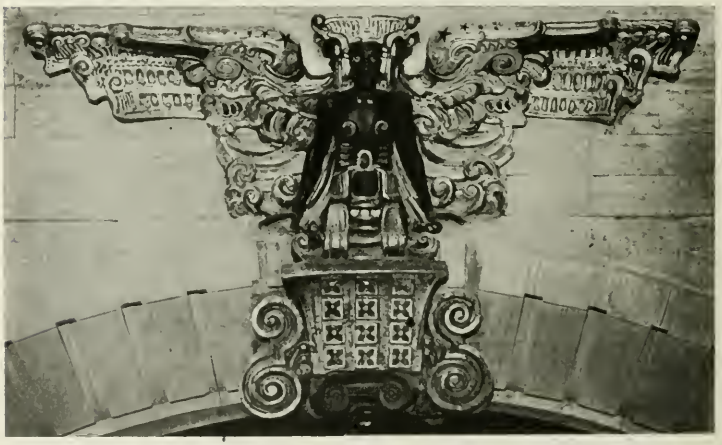
To the writer it seems a daring and courageous thing to essay a combination of a modern office building and a house of pleasure. The result demanded being "something unique and picturesque and also a sane solution of a practical idea." This presented a serious problem to the creators of the building, as there are basic reasons why it would be impossible to follow definitely, or adhere strictly to, any one form or school of architecture or art in dealing with such widely diverging elements. Yes, beyond doubt it was a problem profound, but that it has been most effectively and satisfactorily solved goes without the saying, and this has been done very largely through the psychology of personality. Mr. Sid Grauman, manager and lessee of this new enterprise, is rather striking in his unusualness, being possessed of vivid aesthetic qualities combined with rare business sagacity; added to which is a youthful enthusiasm which has rendered his interest in the erection of the theater a real joy to beholders. He has kept very closely in touch with the structure from the moment his lease was signed, mounting scaffolds, dodging buckets of falling mortar, personally superintending the purchase of fabrics, selection of furniture etc.—in fact, forming an intimate acquaintance with each and every phase of the work. Also the greatest personal interest has been constantly evinced by the chairman of the building committee, Mr. Homer Laughlin, a leading capitalist of Los Angeles. Mr. Laughlin's desire has been to bring into the world a thing of beauty as well as something which would prove a practical commercial investment, and without his clear visioned co-operation this theater could not have been possible. There are wonderful achievements of almost unbelievable cleverness in engineering feats, which are due to the mastery of the architect of the building, Mr. A. C. Martin; in short, all the "chosen" who each did his "bit" toward the consummation of this work must surely feel that he may answer

ADAM
A Decoration in dome of mezzanine

lustily to the roll call when the "good and faithful" foregather. I am told that there is much which is notable and noteworthy in many of the technical and scientific points of this structure, both as to interior and exterior, but to me the compelling note of it all is the "atmosphere." The interior of the theater fairly teems with it. It is all about one. It is seen, felt and almost heard. It is quite possible that there may be those who will say that from the viewpoint of the approved canons of art the tout ensemble is an anomaly. Perhaps it is, but, if so, I am such I adore anomalies, for this theater is a most fascinating and entrancing achievement, and, despite its infinite variety, we

CUPID
A Decoration in dome of mezzanine

feel that it is largely the evolution of one mind, and that that mind is allied to a soul, winged with imagination and idealism, freighted with the efficiency of artistic craftsmanship, and balanced by a clear sense of humor, is obvious from the very beginning of your pilgrimage of inspection. First you are struck with a sense of dignity, a feeling that the note which strikes has a nobility and depth of purpose, which, however, does not reach the austere, because something happy and playful seems to



Tragedy Triumphant—detail on proscenium arch. Designed and modeled by Wm. L. Woollett for A. C. Martin, Architect

enter into your impressions; then you are a bit overpowered by a wild riot of color, the effect of which is something so gorgeous, so voluptuous, so suffused with the magic of Pagan beauty that you almost feel blowing in your face "Sabean odors from the spicy shore of Araby the blest." The motifs which run through the decorations are like a minor strain in a musical movement, but are all the more interesting for being subtle.

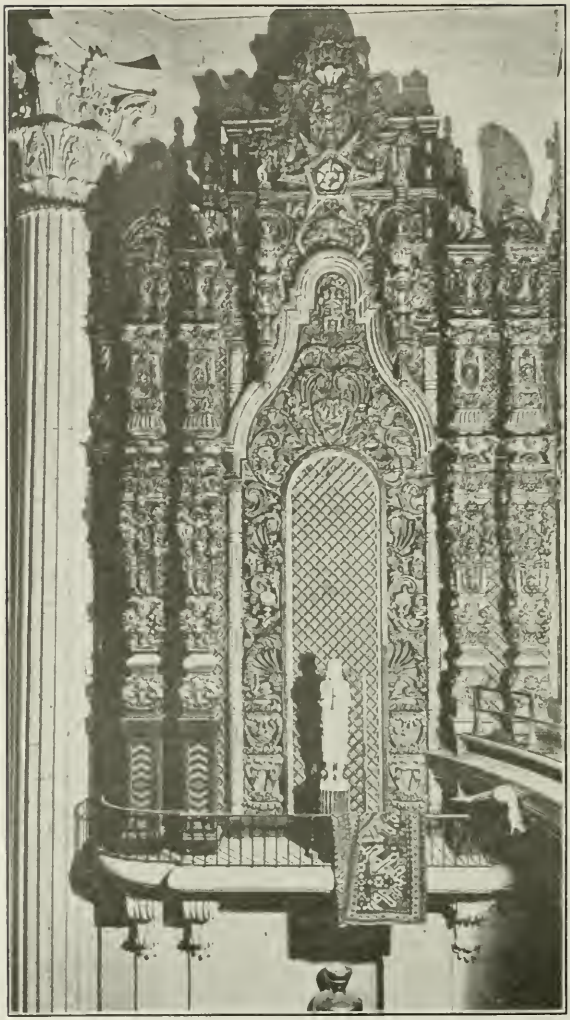
The children have been especially kept in mind, as the beautiful little story of Ruskin's "The King of the Golden River" is delightfully recalled to them by the symbol of the Golden Mug which belonged to little Gluck, whose wicked brothers forced him to place it in the fire, and from which sprung the weird figure of the West Wind, which is seen in the winged figure surmounting the proscenium arch. The pleasing countenance of Gluck, the little brother, the humorous unpleasant faces of the two wicked brothers, and even the little dog, are all to be found on the screen.

Americanism of today and of days that are past is betokened by a wonderfully modeled Bison head, such as were known to the "49ers," the long-horned cattle from the Texas plains, even the playing cards and the "guns" of the American cowboy. The murals of the building are particularly interesting and unusual, some of them being done directly on the rough concrete wall surfaces just as they were left by contractors when the covering was torn away. This rough texture demanded a technique of great virility and the effect is commanding; beautiful in color, intelligent as to composition, and naive in drawing. There are numberless beautiful statues in many of which has crept the spirit of St. Gaudens. The obvious ostensible effect of the decoration is, of course, theatrical; there is always the idea of wealth and opulence, also of color almost to a barbaric degree; but there is an antithesis to all of this in the feeling of freedom from care which makes one feel

> "The lanes, the roads, the heavens, the hills, are not a world today,
> But just a place that God has made, for us in which to play."

The furnishings of the theater are very rich. The carpets were especially made, and are beautiful in color and texture; luxurious and gorgeous would perhaps properly describe the wonderful floor coverings. Rugs and primitive hangings are used in profusion, varied-hued lights bathe the rough walls with mystic tones, making one forget modernity and commerce, and carrying one into other times and other worlds than ours.

The moldings are Greek-like in feeling, and the columns and cornices of the interior are taken en masse from the Choragic monument to Lycrates. The expression of the building in as far as its decorative is concerned is two-fold. To form a contrast the decorations, carvings and mural paintings are essentially light, glad and buoyant, taking away the idea of hardness, rigidity and straightness which must to some extent characterize the areas of the structure. Perfectly colored and uniquely designed ceiling and dome are the very epitome of gorgeous splendor, a sight so brilliantly beautiful that Soloman in all his glory could not but blink with envy could he behold it. One might fancy that the combined jewels of all the Kings of Babylon and all the Queens of Egypt might have been placed therein. Words seem inadequate to really describe the atmosphere of beauty and charm which is conveyed to you on your first visit to Mr. Grauman's theater. I overheard one very sane looking individual remark, "I never dreamed it possible for one person to feel so many different kinds of ways at one and the same time," all of which makes one to meditate and marvel upon the manner of mind possessed by the man who dreamed these dreams and made them come true. This man is Mr.



ORGAN SCREEN – INTERIOR GRAUMAN'S THEATRE, LOS ANGELES. A. C. MARTIN, ARCHITECT. WM. L. WOOLLETT, DECORATIONS. STATUE IN NICHE BY BURT JOHNSON, SCULPTOR

Mural by Wm. L. Woollett and Paul Mays

Dome in Mezzanine. Decorations by Wm. L. Woollett

W. L. Woollett, who is a member of the firm of Woollett & Woollett, architects of San Francisco. * * * Mr. Woollett is a man (as is obvious) of most extraordinary artistic ability: his originality is most unusual, his ability most varied, and his imagination stupendous. His interest in his work is almost consuming, and his industry well-nigh indefatigable. One of the interesting things about him is that rare quality, seldom found in one of his sex—modesty. Another, the undercurrent of clever satire which is demonstrated in some of his murals—witness the "Witch Scene" from MacBeth, also "Music of the Day," both of which have satirical suggestions wholly—however, without the cutting element of irony. Apparently it may be said of him that he is of the opinion that "More than Youth is Comedy with vine leaves in her hair." Mr. Woollett has been a resident of Hollywood since the beginning of the Fair, more than a year ago, and was recently married to Miss Louise Knappin. * * *

It is not too much to say that Mr. Woollett's work has been a "labor of love" with him, for the artistic sense finds an inspiration in achievements of this kind which spur it on to its best endeavor. From the beginning it was apparent that Mr. Grauman and Mr. Martin were determined that this theater was to represent architectural design coupled with a high degree of mural decoration, and the complete accord between the three men in this respect has certainly been fruitful in giving to the city a building which will command attention from even the most blasé of "globe-trotters."

Even in the comparatively minor detail of inscriptions for the mural paintings the choicest lines from famous poets have been culled, and in every instance the choice has been remarkable for its aptness and beauty. In this way the literary and the artistic are both blended in appropriate accord, and the music of the bards is played to the accompaniment of the design of the painter. Art, indeed, in its multiform phases has been ransacked to furnish forth the triumph of perfection to which this structure attains. Decoratively, literally, artistically, architecturally—it presents something unique and beautiful in the domain of a home for the histrionic art.

We turn instinctively to the Parthenon and the Pantheon for recollections of the architectural triumphs of mythological days. We remember with pride the chaste beauty and ornateness of St. Paul's, the Strasburg cathedral and the lately desecrated Cathedral at Rheims. We know that man in striving towards the beautiful gropes among the schools of the past and the Renaissances of the present. That he reaches out into new fields, and produces new ideas, and that the search for beauty goes on unceasingly, striving to find

> "The light that never was on sea or land—
> The consecration, and the Poet's dream."

And so realizing, we must yield a meed of praise and homage to the men and the intellect which made this edifice a possibility in our city.

Editor's Note.—In reprinting most of the Graphic's article this magazine does not assume responsibility for any inaccuracies or misstatements. In justice to the architect, however, it should be made plain that Mr. Woollett's work was done under Mr. Martin's supervision and while in the employ of the architect and owner, Mr. Homer Laughlin, Jr. Credit is also due Mr. F. S. Mills of Los Angeles, who designed the splendid lighting effects, and Mr. Joe Morro of San Francisco, who modeled the terra cotta figure at the third floor line on the exterior of the building, a piece of workmanship which Mr. Martin has pronounced most creditable.

BUILDING FOR THE EVER READY WORKS OF NATIONAL CARBON COMPANY, SAN FRANCISCO
Maurice C. Couchot, C. E.

Concrete Into Its Own*

By S. M. FECHHEIMER, in Modern Building

AMERICA is a motion picture of rapidly changing views and conditions. A few years ago all was abundance—there was a surplus of wealth everywhere. Nature had dowered us with limitless resources; little efforts brought immense returns. What mattered it then if there were waste? There was plenty and more to take its place.

In erecting buildings, literally and actually we had money to burn. Any kind of building of any sort of construction would pay for itself, because every building was in demand. A flimsy building might burn down and thus destroy national wealth, yet there was money enough to replace it. A needlessly expensive construction might represent an overbalanced investment, yet the building was so badly needed that it would return an ample revenue.

A new reel is thrown on the screen. The scene now is war, with all the lessons of thrift it has brought home to the American people. "Consume less, produce more" is an economic necessity. Make every stroke count, stop waste, do and use everything efficiently. We must finance and support our allies; all our energies are needed to win the war.

The building and construction world has been quick to realize the rapid change in conditions and to adapt itself to them. Methods and materials which had become practically standardized were discarded almost over night and new ideas adopted. Institutions which had resisted the modernizing influences of recent years and had steadfastly adhered to their old established practices, quickly readjusted themselves to the new times. Everywhere the one idea has been to do everything in the most effective way possible. War is a ghastly schoolmaster, but the building world will profit for generations by its lessons.

* Illustrations selected by the Editor as notable examples of recent concrete construction in San Francisco and vicinity.

SECTION OF OCEAN BEACH ESPLANADE
AS IT WILL APPEAR WHEN COMPLETED

COMPLETED SECTION OF OCEAN BEACH ESPLANADE, SAN FRANCISCO
M. M. O'Shaughnessy, City Engineer

WEST PORTAL, TWIN PEAKS TUNNEL, SAN FRANCISCO
M. M. O'Shaughnessy, City Engineer

POWER PLANT FOR ALAMEDA MUNICIPAL ELECTRIC LIGHT COMPANY, ALAMEDA. EDWIN J. SYMMES, ARCHITECT. MAURICE C. COUCHOT, CIVIL ENGINEER

Reinforced concrete has been given new impetus since the war began. It has entered many new fields of application and become universally established in the old ones. War is a veritable glutton for steel and consumes immense tonnages of it in every phase of its activities—ammunitions, guns, ships, trucks, structures, etc. The tremendous demand for steel naturally created a shortage and increased prices.

Builders had to economize in the use of steel whenever possible. What is more natural than to use reinforced concrete instead of structural steel? For instance, a reinforced concrete beam or girder requires only one-third of the steel necessary in a structural steel member. What is more, the concrete is the best kind of fireproofing at the same time that it is helping to carry the loads; while the fireproofing for structural steel adds just that much dead weight and does not contribute to the strength.

These are old facts, you will say, and have been recognized in building many industrial and commercial buildings. Yet it took the shock of the war and the necessity of finding something that could be used instead of structural steel to cause the application of these facts to many types of buildings.

For instance in many monumental and public buildings, where expense was a minor consideration, a frequent practice was to use steel girders placed comparatively closely together with some form of fireproof floor between them. This is a thing of the past now, and we have the advices of such prominent architects as Mr. Cass Gilbert, who writes:

"* * * * We have been perhaps extravagant in America in the use of structural steel for building work. There are hundreds of buildings erected in this country every year which could be just as well erected without steel, and in hundreds of others the amount of steel could be greatly reduced. An enormous tonnage could be saved if reinforced concrete, masonry or other material was used. Practically all buildings of moderate height can be erected without the use of large quantities of structural steel. Reinforced concrete or old-fashioned masonry can take its place * * * *"

Many examples can be cited of the general use of reinforced concrete where it has hitherto not been considered practical or has been used only in rare instances.

In theaters, for instance, it has usually been considered that structural steel presented the easiest solution to the complicated framing of long span girders, inclined floors and cantilevered balconies. Nowadays it is quite a common practice to build this entirely of reinforced concrete, making a complete monolith of girders, cantilevers and floors; and as this construction has developed it has been interesting to see the ingenious way in which all parts of the construction have been used to give additional strength and stability. And the surprising part of it all has been that the construction has worked out very simply and is proving a revelation from an economical standpoint. Needless to say, there will never be a return to the old standards even when the war is over.

Interesting examples of the use of reinforced concrete in theater constructions can be found in many places. A particularly noteworthy one is that of the theater in the Edison building at Los Angeles. Here a 104-foot reinforced concrete arch serves as a fulcrum support for six cantilevers under the balcony. It is stated that delivery of structural steel for this work could not have been secured from Eastern fabricators short of eighteen months. The cantilever portion is in the form of a truss, and the entire structure was tested to twice its live load with very satisfactory results.

In New York city there is another interesting concrete theater construction, in the Vanderbilt on West 48th street. Here also reinforced concrete was used because of the difficulty in getting steel. The main balcony girder of reinforced concrete is 56 feet 2 inches in span. The design is ingeniously prepared and is proving economical in material and cost.

Designs in long span floors and girders ordinarily not contemplated in reinforced concrete have become quite common. Many interesting examples can be pointed out. At Emory University, Atlanta, Ga., there is a reinforced concrete floor with a clear span of 37 feet 6 inches, and in the same building a roof girder 52 feet 2 inches in span supporting in addition an 8-inch concrete partition.

In the United States National Bank of Portland, Oregon, girders 40 feet in span were employed in all five stories of its height to support the floors.

Churches, as a rule, have not adopted reinforced concrete extensively because of the complicated structural framing necessary, yet we find in recent times a number of interesting examples, such as the Gesu McDermott Memorial Church at New Orleans, the San Augustin Church at San Juan, Porto Rico, and the State Mosque at Kuala Kangsar, Federated Malay States.

In foreign countries we are seeing some of the most interesting and ingenious applications of reinforced concrete. Many of these countries, shut off by embargoes and steel shortage, have literally been forced to develop the use of concrete, and they are doing so with excellent results. A few examples of these foreign installations are: The Buddhist Temple at Hakodate, Island of Hokkaido, Japan, designed by Japanese architects and engineers, reinforcement furnished by the Truscon Steel Company. A Godown (warehouse and store) for Lee Chong, at Shanghai, China. Preston House, Brisbane, Australia.

In the Argentine Republic is the reinforced concrete building of the Smithfield & Argentine Meat Co., at Zarate; also a refrigerating plant for Armour & Co., at Rio, Santiago.

In the Philippine Islands there is the concrete St. Anthony Apartment Hotel at Manila; and in Porto Rico the all-concrete Presbyterian Hospital at San Juan. Most ingenious is the construction of the reinforced concrete Zamboanga Pipe Line in the Philippine Islands. Here the curved Hy-Rib units were plastered, completed and shipped ready for use in the pipe line, the concrete layer being poured on the outside to complete the construction.

In England it is quite common to build ore and lime bunkers of reinforced concrete, an interesting example being those of the Brymbo Steel Works. Here everything is of reinforced concrete, including the bins, bunkers, trestles and supports.

In Pietermaritzburg, Natal, there is a completed arched-rib truss bridge of reinforced concrete which is 170 feet long, 30 feet wide and has a central span of 75 feet.

In storage tanks of all kinds, the use of reinforced concrete has increased tremendously. These tanks are used for storage of grains in the West and Northwest, and with suitable lining they are being used as reservoirs for oil throughout Ohio and the Southwest. Water tanks of concrete are found everywhere. An ingenious water standpipe has been developed in the Southeast. In this construction the standpipe tank, which is of necessity high in the air, is supported by a stem of reinforced concrete with a spread foundation to give proper stability. The tank has an appearance similar to a goblet.

Special applications of concrete can be found in almost every issue of our technical press, in domes, trestles, bridges, stadiums, etc., of all kinds. Even

CALIFORNIA THEATRE, SAN FRANCISCO
Alfred Henry Jacobs, Architect

at the mouth of the Kaleakala Crater in Hawaii, the little rest house is built entirely of concrete.

The war has brought prominently before communities the necessity for industrial housing. Permanency and sanitation are a requisite in these buildings. Many excellent groups of entire concrete houses have been built with great success and economically. Improved methods for this construction are being developed almost daily. A few examples of the all-concrete industrial group house are:

The Lehigh Coal & Navigation Co., Lansford, Penn., are erecting houses for their clerks, engineers and superintendents. The Delaware, Lackawanna & Western Coal Co. have constructed what is known as "Concrete City" in Pennsylvania for their employees. Nothing but concrete is to be found in these houses, except the furnishings.

In military affairs, concrete is playing an important part in defensive works. Not only is it being used in fortifications, but also for linings of trenches, dugouts and building of "pill-boxes," gun foundations, etc. Many of the hospitals, particularly the base hospitals in England, are of concrete construction using stucco on metal lath.

The railroads are using reinforced concrete more extensively than ever, as is exemplified by constructions such as the reinforced concrete cylindrical coaling station recently completed for the St. Louis & San Francisco R. R. This has an outside diameter of 27 feet and a total height of 75 feet, being

CONCRETE SHIP "FAITH"

entirely of reinforced concrete. The Union Pacific R. R. has built a novel concrete snow shed on its Wyoming lines, consisting of "A"-frames supporting the walls with concrete girders and roofs.

Concrete trestles supporting steel spans are quite common, as is also the extensive use of concrete in terminal buildings. The new Trans-Mississippi Terminal at New Orleans has the train sheds, as well as the building proper, of reinforced concrete.

No picture of the new uses of concrete would be complete without mention of the concrete ships which are occupying so much space nowadays, not only in our technical magazines but also in the popular press. The successful use of concrete ships in Norway as well as barges in other localities has stimulated concrete shipbuilding everywhere. In California there is now being completed a boat of 4500-ton capacity, and larger ones are being planned. Two or three large concrete shipbuilding companies have been organized in the East and already have contracts to go ahead. The United States Government is taking a deep interest in this subject, and has appointed a board devoting itself strictly to concrete shipbuilding. The speed with which a concrete boat can be built, the simplicity of the equipment necessary and the economical cost suggest that it might prove the solution of the shipping problem which is so vital to the success of the Allies.

If we are to complete our motion picture of American conditions, the final scene must show a partial glimpse into the future. Concrete is coming into its own, largely because of its intrinsic merits. No doubt in exceptional cases its use is being forced by war conditions, but it is safe to say that many of its applications have been revelations to designers because of its economy and efficiency. From these places it will not be dislodged, just as other materials will continue in use in the places to which they are best fitted.

No Drop in Building Material Prices

THE attitude of several state governments recommending that construction work on public buildings of all kinds be stopped is being severely criticised, for stoppage of any line of work at this particular time takes away the means of support to those employed in it and stops the progress of the community by just so much.

Just how much of this condition is justified by fact and how much is due to plain hysteria remains to be seen, but it is time to eliminate any hysteria there may be and bend every effort to get back to a basis of fact and to a continuance of regular lines of work.

So long as the war does continue, we need not look for any decrease in the price of material. Any regulation of prices that may be brought about by government action will apply to food supplies, and it is not likely to have any effect on building materials or supplies except as the government needs them; neither can we hope for greatly improved labor conditions, transportation facilities, or better conditions for prosecuting our particular class of work.

In fact, increased demand for material, transportation, etc., to supply and fill the orders given out by the government alone will require all the increased facilities the producers and transportation men may provide, and much of the present equipment and labor; and labor, which has been scarce in many parts of the country for the last two years, may become even scarcer as our armies are recruited and the men needed to meet the government requirements for army and navy operations of war are withdrawn from their customary occupations.

No improvements over present conditions can be expected for some years to come.

All are agreed that the requirements of the government must take precedence over everything else, but a wise government will do all in its power to render our distributing machinery more efficient and employ all surplus over government requirements in carrying forward the established business of the country in its usual way. The whole question should hinge upon the need of buildings in question and whether they can be dispensed with without penalizing the owner or community to a far greater extent than the saving which might be effected by waiting.

If the buildings are needed now and cannot be dispensed with for more than one or two years, it would seem to be the part of wisdom to prepare for same and place contracts at the earliest possible moment and do all possible to execute the work.

With the continuation of the war for two or three years longer, and because of the enormous demand to replace the waste and destruction after the close of the war, a decrease in price of material and labor and all things entering into the cost of building short of the next five years is extremely improbable.

* * *

Door Bed Not Part of Building

A door bed is not a part of the building in which it is installed and may be sold under a lease contract the same as any piece of movable furniture, according to a decision handed down by Judge Taft in the superior court of Los Angeles county. The decision was rendered in a suit brought by C. C. Hurd, trustee, and Laura E. and C. F. Borton, owners, to restrain the Southern California Hardwood & Manufacturing Company from removing the Murphy door beds which it had installed in the Blackstone apartments on Olive street near Third street under a lease contract with Laura E. Borton. It is probable the case will be appealed.

Some Notes on Swimming Pools

SWIMMING POOL, ESTATE OF MR. J. F. CARLSTON, REDWOOD CANYON, CALIFORNIA
G. E. McCrea, Architect

SOME good suggestions on the proper construction of outdoor swimming pools are made by Professor William S. Franklin of the Massachusetts Institute of Technology in a paper on "The Bethlehem Plan Swimming Pool," and recently published in the American Physical Education Review.

The Bethlehem Plan provides for emptying, scrubbing and refilling a pool every night and for circulating the pool water through a filter while the pool is in use at a rate sufficient to turn over the contents in eight hours, and at a cost which is very much less than the cost of the usual procedure.

The essential features of construction and operation of the Bethlehem Plan pool are as follows:

(a) The pool must be accurately rectangular, and the bottom must have a one-direction slope; spoon-shaped bottom not permissible.*

(b) A large sand filter is installed alongside of the pool under the platforms and dressing rooms, a low-head centrifugal pump lifts the pure water from the base of the filter bed continuously and discharges it into one end of the pool, and the impure water flows out of the pool at the other end into the filter bed.

(c) A very light bulkhead spans across the pool like a water gate.

(d) While the pool is in use this bulkhead is held flat against the end wall of the pool or against the end wall of the pool room.

(e) At the beginning of the emptying, scrubbing and refilling operation the water valves are set so that the pure water from the pump flows into one end of the narrow space between the bulkhead and end wall of the pool, sweeps across to the other end of the bulkhead and flows through openings in the bulkhead into the pool. Under these conditions the end wall of the pool and the back of the bulkhead are swabbed by hand, and the sediment thus loosened is swept out of the narrow space into the pool by the swift stream of pure water.

(f) Then a simple holding mechanism is attached to the bulkhead to keep it vertical and squarely across the pool, the holes through the bulkhead are closed, the pure water behind the bulkhead rises slightly in level and pushes the bulkhead along, and a soft, pneumatic, squee-gee cushion scrubs the side walls and bottom of the pool.

(g) When the moving bulkhead reaches the other end of the pool the motor switch is automatically opened and the pump is stopped.

(h) When the attendant next comes on duty he starts the pump, opens the holes through the bulkhead, fastens the bulkhead in position against

* The side walls must be accurately parallel and plane (tolerance ± 0.25 inch) and the bottom of the pool must everywhere conform to a straight edge held cross-wise of the pool (tolerance ± 0.25 inch).

the end wall and removes the holding mechanism, thus clearing the pool for bathers.

(i) A projecting strip is fastened to each side of the bulkhead near the bottom; this strip comes against the end wall of the pool, forming a bounded channel in which the collected sediment lies, and the sediment is easily drawn out of this channel and discharged into the sewer by opening a properly arranged valve.

Remark.—The high-level pure water which pushes the bulkhead along flows through every minute crevice between the squee-gee cushion and the sides and bottom of the pool; not a drop of used water is left in the pool at the end of the emptying, scrubbing and refilling operation, and every portion of the inside of the pool has been thoroughly scrubbed and rinsed.

A heavily patronized public pool would have a filter and pump equipment sufficient to turn over the contents of the pool in one and a half or two hours, so that the emptying, scrubbing and refilling operation could be performed early every morning, again between noon and 2 p. m., and again between 6 p. m. and 8 p. m.

The Bethlehem Plan is a straightforward application of the principles of hydraulic and sanitary engineering to the swimming pool.

Many landscape enthusiasts object to the rectangular swimming pool, but no landscape ideal should take precedence over the hygienic and economic aspects of the swimming-pool problem. Swimming pools must be clean or our boards of health will close them, and they must be reasonably cheap in operation or we cannot afford them.

A pond lends itself beautifully to one kind of artistic treatment, and a pond-like swimming pool set among trees and shrubs, with dressing rooms hidden from view, is a very pleasing object; but rectangular structures have long been used in parks and gardens, and there is an effective artistic treatment of the rectangular swimming pool. Like a Roman bath, it should honestly proclaim itself a man-made structure, with its widely flung platforms and pergolas. When we build a garden house for a more complicated mechanical purpose than making love we construct a building and not a bower, and when we build a swimming pool let it be a hydraulic installation and not merely a pond. It is not feasible to make a pond-like swimming pool that can be kept decently clean at a reasonable cost.

The engineering features of the Bethlehem Plan pool are:

(a) The requirements as to shape of pool and as to size of filter beds have already been mentioned.

(b) The gutters along the two sides of the pool have multiple discharge ports through which the overflow passes directly into the filter beds with a minimum of back wash. This is an important feature, because of the common use of the gutters for spitting.

(c) The bulkhead weighs 500 pounds for a pool 25 feet wide; it lies flat against the end wall of the pool when it is left at the deep end of the pool, and when it is left at the shallow end of the pool it is hoisted by two small tackle blocks which are attached to two swinging bracket arms and swung flat against the end wall of the room or pool enclosure. It takes one man forty seconds to hoist the bulkhead and swing it into this out-of-the-way position, and an equal time to replace it in the pool.

(d) The bulkhead-controlling mechanism consists of two heavy sliders (100 pounds each) which slide alongside of the pool (one on each side of the pool). Each slider has two attached fingers which engage the end

posts of the bulkhead and hold the bulkhead in a vertical position, and a quarter-inch galvanized sash cord arranged in a well-known manner is attached to the sliders so as to constrain the sliders to move at the same speed, thus holding the bulkhead squarely across the pool. The sliders and rope can be brought from a storage closet and arranged for service by one man in five minutes, or taken away and stored in the same length of time.

A maximum difference of level of three-quarters inch front and back of bulkhead is all that is required to push the bulkhead along, and the bulkhead is arranged to come flat against either end wall of the pool, so that it cannot be strained when the motor-stopping mechanism fails to operate or when the attendant neglects to open the proper gates before drawing off water from behind the bulkhead.

(e) The automatic motor-stopping switch (one at each end of pool) is actuated by a rod (one at each end of pool) which lies in a covered duct in the platform floor. The bulkhead comes against this rod and opens the switch, which is conveniently mounted in a safe, dry place.

(f) To remodel an old pool for Bethlehem Plan, operation would involve the complete demolition of the old pool, the excavation for the large filter beds and the rebuilding of pool and filter beds and platforms. This would cost about $5,000 for a pool 25x100 feet, but it would make possible a greatly increased degree of cleanliness of pool and at the same time give a sufficient reduction of operation costs to pay 6 or 7 per cent interest and depreciation on the cost of remodeling.

Wide observation shows that extremely few users of a pool indulge in deep diving, and it is well known that one can dive from very great heights into six feet of water. Therefore, any depth of water in excess of seven feet is useless. The writer knows of one men's pool, for example, where the thin layer of sediment, which can be seen on the white marble bottom, develops and remains intact after every periodic cleaning of the pool, and the depth of the pool is eight feet. The users of this pool seldom or never dive to the bottom of it.

The writer has adopted maximum and minimum depths of 7 feet and 4 feet, on the assumption that small children should be taken care of in a separate all-shallow pool.

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Some Data About the Largest Reinforced Concrete Building

A reinforced concrete building of more than a million square feet floor area has been completed in St. Louis for the Anheuser-Busch Co. It has one 26-foot story below ground and six stories above ground. The following figures give some idea of the magnitude of this structure:

Ground area sq. ft.	117,000
Floor area, sq. ft.	1,117,700
Cubic contents, cu. ft.	21,932,000
Concrete, cu. yds.	81,040
Cement, bbls.	121,560
Reinforcing steel, tons	6,780
Enameled face brick	2,000,000
Other brick	7,000,000
Lumber in forms, ft. b. m.	5,951,000

A Thinking Spell for Architects

WHEN the great adjustment of architectural and building affairs is accomplished and business assumes its normal activity, we will begin to realize and appreciate the benefits of the recent lull. The new era will be marked by higher standards and improved methods applied to manufacture and the execution of architects' designs. Likewise, there will be noticeable a larger consumption of materials drawn from our own natural resources which are destined to replace, permanently, raw materials that have hitherto been imported from European countries.

Our manufactured products for building purposes will be in reality American goods and we have faith to believe that they can and will be made as good and reliable as any foreign importations.

When the wheels of progress show a tendency to turn backward, thinking men direct their attention and energies towards the improvement of business systems and it ofttimes happens that the interposition of Providence actually provides these thinking spells for our ultimate good. An architect expressed the thought in this way: "Architectural and building afflictions are about the same as the physical ills that afflict the human body. A man goes on under high tension, disregarding little pains and aches, forcing the human machine to the breaking point, until Nature rebels and nothing short of complete rest and careful treatment will make the body respond. In other words, he takes an enforced vacation and comes back in better condition of brain and body and capable of better effort.

But along comes the upheaval of the old systems; men have sprung up with real ideas, ordinary people are pondering over the difference between faking and creating, and extraordinary people are endeavoring to satisfy the demand for architecture which shall speak for what the word really means, "The art of building."—Architecture.

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Germans to Build Concrete Ships

GERMAN shipbuilders have been quick to take up the idea of constructing ships of concrete, according to Captain L. Persius, who writes in the Berliner Tageblatt that, owing to prospective shortage of wood, steel and iron for shipbuilding after the war, leading German and Austrian dockyards are preparing to use ferro-concrete on a large scale. Yards are now being constructed to that end.

As told in the London papers, Captain Persius takes the view that all the great shipbuilding countries will be put to the same necessity as Germany to find substitutes for wood, iron and steel. Germany, he thinks, will be in better position than any of the rest for ferro-concrete construction because:

"We possess the most important cement industry in the world. We have far outstripped France, the country where the most versatile uses were formerly made of cement, while we have given the English, the inventors of cement, the fiercest competition in the markets of the world. There seems every reason to hope that in the future the largest ships flying the German flag will be partially of ferro-concrete construction."—From the Nautical Gazette.

Hospital Costs and Building—A Safe and Sane View

"TO BUILD or not to build" is a question that is vexing many boards of trustees and communities at present. The impression seems to prevail in many quarters that the erection of new hospitals or the extension of those already existing should be deferred until after the war. The decision to forego needed hospital facilities has such a serious and important bearing on the health of the community that the editor of Modern Hospital asked Mr. Richard E. Schmidt, the hospital architect, who has made a special study of this question of building costs, to give his views on the subject. Mr. Schmidt's statement follows:

The belief that the cost of hospitals built at present prices is very much higher than the cost of similar buildings prior to the great war is no doubt due to the tremendous increase in the prices of many commodities with which hospital trustees and managers have become familiar, to their great discomfiture and embarrassment, in the purchase of articles required in the conduct of their hospitals. Since 1914, wheat has advanced 93 per cent, paper 82 per cent, feed 83 per cent, coal 115 per cent, woolens, lard, canned goods, and pork 100 per cent, corn 186 per cent, and so on to the 500 per cent advance in some of the necessary drugs, whereas building supplies average an increase of about 30 per cent.

That these advances in building material can be discounted by the architect who is expert in hospital design and who knows where economy can be obtained by using suitable materials of the lowest cost and limiting the quantities of all the material to a minimum, without detracting from the efficiency of the building, is evidenced by the cost of buildings built in 1912-1913 and proposals which have recently been received on the plans and specifications for several new buildings. They are as follows:

One $200,000 complete new building without power house, contracted for in 1912, 31.6 cents per cubic foot.

One $100,000 complete new building without power house, contracted for in 1918, 36.3 cents per cubic foot, an increase of 15 per cent.

One hospital, complete, including power house, contracted for in 1914, 31 cents per cubic foot.

A hospital of similar size and arrangement, contracted for late in 1917, is costing 36.9 cents per cubic foot, which is an increase of 19 per cent, but the increase could have been reduced to 15 or 16 per cent if the owners had consented to a substitution of cheaper materials for a part of the steel trim and tile floors, which are to be used throughout the building.

A first-class apartment house, built in 1911, cost 19.45 cents per cubic foot. A similar apartment house, which returns higher rentals but is not located so well, built late in 1917, cost 22.3 cents per cubic foot, an increase of 15 per cent. The one built in 1917 is fully as good in quality as the former and equal to it in appearance.

The firm of architects which furnished the quoted figures built hospitals without power houses, in 1911 to 1914, at costs ranging from 27 to 43 cents per cubic foot, proving that unit costs varied over a wide range before the war; that some hospitals cost more per cubic foot than others are costing today, and that the difficulties occasioned by the site in the delivery of materials, uneconomical height, occupation of irregular-shaped property, and the selection of expensive materials to satisfy taste or fancy are factors in cost more important than the increased cost of building supplies.

New methods of building construction are now available which reduce the quantities of material, using them in shapes where maximum efficiency is obtained with a resulting economy not only of the materials themselves but also in transport costs and labor of handling and placing.

The result of unemployment in the building industry is causing contractors to figure closer and to reduce their percentage of profit to maintain their organizations.

There is very little likelihood that prices will be reduced for many years; they certainly will remain as high as they are while the war lasts, and will increase when the enormous demand for materials and rebuilding begins again abroad.

Any man can easily verify the fact that prices never fell to the level which prevailed before the Civil War and that this occurred after every war in modern history. Labor is better paid than it has been at any time, and the prevailing value of the dollar has fallen. All industries, and hospitals as well, must conduct their business on the new basis so that the thinking and cautious man will not waste much time thinking about the increased cost of building as compared to the 50 and 300 per cent increase in nearly all other commodities, but will seek to secure the benefit derived from immediate action.

Architecture That Makes the Observer Sigh

"ARCHITECTURE is the art of designing a building, which will not only be handsome today, but will be handsome fifty years hence, when the styles have changed," wrote George Fitch. "There are thousands of handsome structures in America today, but that is largely because we have gotten used to them. There are also thousands of middle-aged buildings which cause the casual observer to sigh for a pair of blinders. Most of these buildings were handsome when they were designed; but the people have recovered from the taste which allowed them to admire their particular varieties of warts, protuberances, bulges, fret work, low-browed porches and jig-sawed jamborees.

"Architecture is one of the noblest of callings, because it produces beauty which makes glad the eye from century to century. The patient architects who designed the cathedrals of Europe 800 years ago for two shillings per day have long been dust, but people still travel thousands of miles to view their work and to grow and expand esthetically while gazing into the soaring vaults of pillared naves.

"If it wasn't for its architecture, Europe wouldn't be worth living in. It is a great tribute to America to say that it is worth living in spite of its architecture. America has many fine architects who produce beautiful buildings in spite of contractors, building committees and tables of estimated income. But it also has many architects who consider that they have done well when they have tastefully arranged a few windows borrowed from different schools of design in a stone wall and have balanced a miscellaneous assortment of towers, spires and domes on top of the same.

"America is full of frame houses designed by occupants of some violent ward; of modest homes designed by a cutter of cheese; and of mud colored railroad stations built by a barn builder who has fallen from his high calling. In time the men who perpetrate these things die, but the buildings live on in spite of our beneficently high fire losses.

"America would have more fine architects if it weren't for the American church, the American frame home and the American two-story business block with the galvanized iron proud flesh on its top. After a good architect has lived around these things for awhile, he renounces his citizenship with a throbbing cry of pain and flees to Rome to live among the ruins of 2,000 years ago when they tried architects for their buildings and hanged them if they didn't suit."

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Improvement in Church Architecture

IN AN ADDRESS in Cathedral Hall, Pittsburgh, recently, Mr. John T. Comes, architect, pointed to the Christian architecture whose wonderful influence for good has been ignored in the erection of so many modern slap-dash and shoddy structures. "Better days are at hand," said Mr. Comes, "and gradually churches arise that do not strike one dumb with inartistic horrors. The clouds are lined with silver and an era of new church building is at hand."

He said that the old cathedrals embody the highest engineering and technical skill, with the ravishing beauty of line and color, ornament, imagery and symbols, "which are pregnant with a thousand meanings lost to the modern mind." From the time of Constantine to the Reforma-

tion, he said, the entire history of architecture is a story of the activities of the Catholic Church.

Mr. Comes related how Christian architects turned from the excellencies of barbaric types and recreated them into living symbols of Christianity. He said that in simplicity of design, economy in construction and in effectiveness and dignity, the early basilicas have served as models down to the present day.

Mr. Comes pointed out that the builders' plans of all the great cathedrals are preserved, and despite what the Hun may destroy by act of vandalism, these cathedrals may be reproduced in all their beauty.

* * *

Why Engineers Rather Than Architects Are in Charge of Government Building Work

WE HAVE previously called attention to the fact that nearly all the cantonment contracts were awarded to engineering construction companies instead of to building companies of the ordinary sort, says Engineering and Contracting. It is worthy of note also that structural engineers are in charge of the design and construction of nearly all the Government war buildings. There has been not a little complaint among architects about this status of Government affairs. At a recent meeting of the Illinois Society of Architects, Argyle E. Robinson said, in reference to "war building":

> Piling bricks and mortar and lumber together in a haphazard manner, strictly speaking, does not come within the scope of the architect and it is not until the requirements of the owner of the structures are such that time for careful study of the problem is available that the architect comes into his own. It is a source of regret to all architects that we could not have been of service to our government, but we must recognize that, where immediate shelter must be had without regard to expense and the refinements of the problem, the quickest way to obtain the desired end is to go to a contractor and say: "Build me four walls and a roof and send me a bill." But I am sure that those who are responsible for the method would not even attempt to defend it under ordinary circumstances for permanent structures, and I am sure that the failure to employ architects was in no way intended as a slight to their ability.

Mr. Robinson is entirely wrong in assuming that the Government cantonment buildings, warehouses, office buildings, etc., are designed by building contractors to whom the Government says, "Build me four walls and a roof and send me a bill." What actually has happened was that some of the best structural engineers in America were employed by the Government to design the buildings and then engineering construction companies were given the contracts to erect them.

The training and taste of nearly all architects is along aesthetic lines, whereas that of civil engineers is along economic lines. Each has its value, but undoubtedly economics should be, and usually is, the primary consideration in all industrial and manufacturing buildings. Hence it has come about that the buildings that are most highly utilitarian are frequently designed by structural engineers. Each year adds to this natural tendency. * * *

The history of reinforced concrete is a part of the history of structural engineering and not of architecture. The same holds true of the history of steel frame buidings. In short, the greatest recent advances in the economics of building design are traceable to structural engineers. This was inevitable, but a recognition of the importance of the structural engineer has been slow in coming. It has taken a war to throw the spotlight upon structural engineers—the designers of our new steel and concrete ships as well as "war buildings."

Why Has the Architect Been Ignored in Government War Work?

ON the opposite page is published an editorial from Engineering-Contracting, commenting upon the engineer's triumph in government work since the beginning of the war. Attention is drawn to the fact that the engineer has been recognized in preference to the architect in designing and building cantonment and other Federal structures. Writing on the subject in the March number of Architecture, Mr. Frank E. Wallis, A. I. A., says:

One time having been a practising architect, and at this time, in common with many others, being wholly without practice, I started on a pilgrimage seeking instruction. I am puzzled over the position that my profession occupies in the minds of the war-maker and other efficient business men. I decided to investigate. As architects we should be supremely useful to our government, our practice and habits of necessity compelling us to know men and material, to expedite and to anticipate the necessities of construction of all sorts, to avoid waste and contention, and above all to get results. According to the information given me in Washington and by men in Wall street, this seems to be somewhat of a delusion.

I fell asleep on my journey and, sleeping, I dreamed that I was listening to a proclamation being read in the public square: "I, Woodrow Wilson, President of these United States—take possession and assume control of each and every real and approved architect, or his brains, his ability, his force, and his office, with Blank Blank as director-general." It was only a dream. I had been reading that proclamation of the President wherein he took over the transportation system of the country.

Let the artists and scene-painters do the camouflaging work—they are more fully trained and experienced in that art. It is the desire of every genuine architect in these United States to be employed or to be used in the serious and important work for which his training has fitted him, the work of planning, buying, and building schemes, of handling supply men and manufacturers, of hustling labor of any sort whatsoever, and of guarding the finances of Uncle Sam as carefully as the finances of a client.

* * *

As to the director-general of the architects, there is no doubt but that Uncle Sam could find many men equally as efficient as a certain director-general who once tut-tutted the committee of the American Institute of Architects.

Here is the kernel of our trouble, I believe, and the cause of our rejection as helpful citizens in the designing, buying, and building crisis which war conditions and the draft have forced upon the country. Uncle Sam has commandeered food and fuel, textiles, bricklayers, plumbers and steam-fitters, medicine men and engineers, but the architects rarely. I have started on a pilgrimage to discover, if possible, wherein lies this misunderstanding, beginning my journey in Wall street among men who have done things, who are doing things, and who should be well informed as to our ability, for they have been and are to be our clients.

I began my study in psychology by demanding an answer to this query: Please tell me quickly, what particular picture does your mind conjure up when I say "architect" to you. "Oh, well, when the word 'architect' is mentioned, I see in my vision a nice chap, well dressed and with assurance, selecting wall-papers and furniture, and working over pretty water-colors of mantel-pieces, country houses, or churches, and at intervals chatting entertainingly of Greek history and the Middle Ages."

This answer was so common that I was amazed, though I found in Milwaukee that I had not unearthed a great secret, for a leading architect of that city had received his shock from Washington. He had presumed to offer his services as an architect, and was informed that architects were of no use now, that men who could plan, construct, handle men, and hustle were needed, not architects!

* * *

The person who conducts his business under the title of architect appears not always to be exactly the individual that would seem to belong to his job. He has too often made himself something different for public consumption, and it has pleased him to present one side only of his complex character. In doing this he has unconsciously lied to the public and to Uncle Sam. He does this, I presume, so that he may wrap his sensitive and artistic qualifications in the napkin of professional dignity, and save his aesthetic delicacy from contact with coarse and vulgar commercialism. He Oscarwildes his real status. And for this he is today tahoo and warned from the vicinity of real action.

The man-power of the nation has been called to the colors. The steam-fitters, the mason and building workmen of all classes have contributed their quota; the

(Concluded on page 106)

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

A. I. WHITNEY - - - *Manager*
T. C. KIERULFF - - - *Legal Points*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. LIII. MAY, 1918 No. 2.

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FACING THE FACTS

Abnormal conditions created by war can be met only with abnormal means. The sooner we face these facts frankly the greater our ability will be to prosecute the war to a successful conclusion. To meet the great financial strain which war has placed upon us, there are three available means at hand:

First, thrift; second, increased production; third, credit expansion.

It seems reasonably certain that we must resort to all three methods in some degree, and we should both individually and nationally adjust our affairs to meet the conditions they impose.

A better understanding of what these measures of relief imply certainly must develop clarity of thought regarding the whole situation. Concerning thrift there has been much hysterical agitation and somewhat unbalanced enthusiasm, which has served to create a counter-current of resentment and opposition that is not in the public interest. No right-minded man will challenge the basic need for rational thrift, but such thrift does not mean parsimony, nor does it mean the unsettling or destruction of legitimate business. The apprehensions which have been created by some of the extreme thrift propaganda are unfortunate and not based upon sound economic or patriotic grounds.

The normal savings of the people of the United States at the outbreak of the European war were estimated at $5,000,000,000 or $6,000,000,000 a year; in 1917 they were estimated at $14,000,000,000 or $15,000,000,000, and an increasing measure of thrift is reflected on all sides—in the investment market, savings banks, life insurance companies, etc. To carry a thrift program beyond the point of this rational increase in saving could serve only to depress business, destroy values and create unemployment.

Of course, it follows that the Government should have right-of-way in the production of materials for war, but beyond that required for the Government's present use there is a tremendous productive capacity which certainly should not be dried up by arbitrary rulings or false economic theories. It is certain that the spirit of optimism must be kept alive in our people and that good cheer is an important factor in financing our way to victory which must not be overlooked. It is out of such soil that government loans and taxes must spring.

Business men and wage earners cannot lend money to the Government unless they can make money. And business must earn more money this year than last year. The Government is going to need more money, and increasingly more money, before this war is won.

There must be discrimination, of course, between that which is essential and that which is non-essential. But no legitimate business, which can make money without competing with the Government, is non-essential. In fact, it is very essential because money is one of the most important munitions of war. And, it should be remembered, the people who earn the money in such businesses are among those who invest largely in the Government's war loans, and who pay taxes.

Loans for building purposes should not be entirely discouraged. It is the duty, the patriotic duty in the larger sense, of banks to supply the monetary needs of their clients in general business as far as possible, after financing the requirements of the Government. Non-essential business can be regulated by the Government through priority orders, and otherwise, most effectively.

Between the fallacy of "business as usual" and the threat of "drying up business" there must certainly lie a sane middle course, says Mr. Chas. H. Sabin, a prominent New York banker. "This should be a course of wise economy and business conservation which will neither exploit nor wreck, but maintain and protect our business system.

"While England has furnished us with many valuable precedents, there are some measures which that country has adopted that could not be applied to the United States without serious consequences, if not disaster. For one thing, the difficulties of commandeering and distributing labor to essential industries here, as it has been done in England, which is a small, compact country, would be practically insuperable. We must solve the labor problem along other lines. It will not be necessary to conscript American labor, any more than it will be necessary to conscript American capital."

President Wilson, in his address to Congress on Government control of the railroads, sounded the note of sanity which must guide and inspire our war activities. The President, it will be recalled, declared "it is clearly in the public interest also that the ordinary activities and the normal industrial and commercial life of the country should be interfered with and dislocated as little as possible."

"WAR IS HELL"

Regarding the war, you are drafted or not drafted.

If you are not drafted there is nothing to worry about.

If you are drafted you have two alternatives:

Either you are at the front or in the reserves.

If you are in the reserves there is nothing to worry about.

If you are at the front you still have two alternatives:

Either you get hurt or you don't get hurt.

If you don't get hurt there is nothing to worry about.

If you do get hurt you still have two alternatives:

Either you get slightly hurt or seriously wounded.

If you get slightly hurt there is nothing to worry about.

If you get seriously wounded you have two alternatives:

Either you recover or you don't recover.

If you recover there is nothing to worry about.

If you don't recover—Well—You still have two alternatives.—Exchange.

Why Has the Architect Been Ignored in Government War Work?

(Continued from page 103)

architect, the class which plans the work for these crafts, which directs these performances and approves their ability, is not considered in the warp or woof of war performance. Why?

* * *

Of course, it is true that many men have offered their services individually, but rarely as architects, and these men are now doing good service. There are architects in the Y. M. C. A., in the camouflage, laying out hospital plans, and doing other useful things; but I maintain that few men, as architects, with their knowledge of men and materials, of finance and fine arts, of construction and transportation, and those other things which the architect needs must contain within himself have been considered as of much or any importance.

Look over our shipbuilding experience, the pendulum swings from a California lawyer to a Chicago engineer. These men have never built ships, nor indeed has the architect, but at least he has engaged himself in assembling fabricated structures in the perpendicular fashion, constructed of the same material as the ships and with a similar type of workman. Of course an architect can build ships!

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. T. Ronneberg, consulting engineer, has opened offices at 516 Crocker building, San Francisco, for the practice of his profession. Mr. Ronneberg is well known to the architects and building interests of San Francisco, having been associated for eight years as consulting engineer for Willis Polk & Company and later with Mr. Lewis P. Hobart. Prior to coming to San Francisco, Mr. Ronneberg was for five years structural engineer for Messrs. Purdy & Henderson of Chicago.

Mr. Adam L. Bush, for many years chief engineer for Mr. John Parkinson, Los Angeles architect, is in Washington, D. C., to which place he was summoned by the federal shipping board. Mr. Bush is considered one of the leading structural engineers on the Pacific Coast. It is understood his services are desired by the shipping board in connection with the construction of concrete ships.

Mr. C. O. Clausen, of San Francisco, is urging the repair and remodeling of many old flat buildings which are now decorated with "To Let" signs. Hundreds of old houses, Mr. Clausen says, are vacant for want of repairs and alterations that would not only make them desirable but attractive.

Mr. Peter W. Ehlers has moved from Anaheim to Long Beach and is now located at 1344 East Ocean avenue in that city, where he contemplates building a bungalow court for himself.

Mr. Scott Quintin, instructor in architectural drafting, has been appointed by the Los Angeles board of education as major and commandant of the Manual Arts high school cadets.

Mr. E. T. Thurston, the San Francisco constructing engineer, has arrived with his company in France. Professor Wing of Stanford University is also reported as having reached the war front.

Mr. Hermann Barth, architect, announces the removal of his office from the Schmidt building to room 607, at 233 Post street, San Francisco.

Mr. Frank M. Tyler, the Los Angeles architect, has moved from 907 Black building, to rooms 404-405-406 Hibernian building, Los Angeles.

Mr. Charles H. Kysor has moved from the Wright & Callender building to 801 Union Oil Building, Los Angeles.

Mill Constructed Building Stands Fire Test

Fire recently swept through the fifth floor of the six-story Merritt building at 608-612 Howard street, San Francisco, which was erected soon after the big fire in 1906 from plans by Messrs. Reid Bros. In spite of the fierceness of the blaze the heavy timber construction was not seriously impaired and at no point did the fire eat through the flooring. Both the architects and owner are very well pleased with the fire-resistance of this building, which is of the mill construction type, with concrete walls and wood floors. The entire damage to the building did not exceed $20,000.

Large Mercantile Building

Mr. John C. Austin, 1125 Baker-Detwiler building, Los Angeles, has been commissioned to prepare working plans and specifications for a five-story and basement class "A" mercantile building to be erected at 621-625 South Broadway for Mr. J. E. Carr. Preliminary plans have been approved. The building will be 67x145 feet. It will have a 12-foot basement, 18-foot first story, 14-foot second story, 12-foot third and fourth stories, and 11-foot fifth story. It will be of reinforced concrete construction throughout, with terra cotta facing.

Class "A" Apartments

Mr. W. J. Saunders 319 Laughlin building, Los Angeles, is preparing plans for a class "A" reinforced concrete apartment house to be erected on Olive street, between Second and Third streets, Los Angeles, for Mrs. Marie Wright. The building will be four stories high on Olive street and eight stories on Clay street with entrance on both streets. It will contain lobbies, amusement room, storage rooms, boiler room and twenty-one apartments of three rooms and bath each and forty-one apartments of two rooms and bath each.

San Jose to Improve Playground

The San Jose Board of Education has voted to spend approximately $60,000 in improving the playgrounds of the various schools. The money is to be obtained from the sale of a block of land owned by the city at Sixth and Empire streets.

R is the beginning of right,
The end of war
And the finish of the Kaiser.

Work of the State Bureau of Architecture

Mr. George B. MacDougall, California State Architect, reports the following list of items of construction now being handled by the Bureau of Architecture, Forum building, Sacramento:

Gymnasium and Trades Building and three cottages, California School for Girls, Ventura. Frame buildings. Will be ready for bids about August 1, 1918	$ 85,000.00
Main buildings, Humboldt State Normal School, Arcata. Concrete walls, wood joists, tile roof. Now out for bids..	170,000.00
Plumbing, heating and ventilating, Humboldt State Normal School. Now out for bids	34,000.00
Pathological Laboratory and two patients' cottages, Napa State Hospital. Tile and frame buildings—plaster exterior. Will go out for bids about June 1st..	85,000.00
Administration building, Norwalk State Hospital. Brick and concrete, tile roof. Will be ready for bids about September 1st	45,000.00
Farm buildings, Norwalk State Hospital. Frame. Will be ready for bids about September 1st	30,000.00
Assembly Hall, San Jose State Normal School. Concrete. Will be ready for bids about July 1st	65,000.00
Laundry building and bakery building, Sonoma State Home, Eldridge, Cal. Brick buildings. Now out for bids..	30,000.00
Cottage for patients and tubercular hospital, Stockton State Hospital. Hollow tile walls, tile roof, plaster exterior, frame. Will be ready for bids about August 1st	50,000.00

$15,000 Apartment House

Mr. C. O. Clausen, Hearst building, San Francisco, has completed plans for a three-story class C brick apartment house to be erected at O'Farrell and Leavenworth streets, San Francisco, for Mr. E. V. Lacey. The building will cost $15,000. Mr. Clausen has also made plans for alterations to the building at 27 Hoff avenue, San Francisco, the property of Mr. M. J. Risso. The estimated cost of the improvements is between $8,000 and $10,000.

$40,000 High School

Mr. W. C. Hays, First National Bank building, San Francisco, was associated with Mr. Franklyn E. Georgeson of Eureka in the preparation of plans for a $40,000 high school building to be erected at Arcata, Humboldt county, California. The plans have been completed and advertised for bids. The building will be frame and brick veneer with terra cotta tile roof. There will be ten rooms and an assembly hall.

Sea Cliff Residence

Plans have been prepared by Mr. Albert Farr, Foxcroft building, San Francisco, for a $10,000 residence for Mr. Robert A. Kinzie, mechanical engineer. The house will be built at Thirty-second avenue and California street, Sea Cliff.

Unique Entrance to Ship Yards

Plans have been completed by Mr. John R. Miller, architect in the Lick building, San Francisco, for entrance gates and guard houses at the plant of the Union Iron Works in Alameda. Considerable study was given the problem by Mr. Miller and the plan as finally adopted not only provides for the somewhat unusual needs of the company, but presents an attractive and not inartistic appearance. On either side of double gates for vehicles will be a succession of forty checking gates, each equippd with a time-clock and acting as a bar to all except actual employees of the company. Fourteen thousand men may be accommodated by these gates. Further protection from outsiders is provided by the construction of four guard houses and a high ornamental iron fence. The guard houses are of brick with terra cotta tile roof.

Ship Building Plants

Two more ship building plants are about to be started on San Francisco bay. One will be built in Alameda for Mayor James Rolph, Jr., and his associates, from plans by Engineer Howard C. Holmes, and the other plant is for the Key Route Basin, plans for which are being prepared by Engineer R. M. Henningsen. The Union Construction Company, which recently received an order for half a dozen large vessels from the United States Government, will operate the plant.

The Union Iron Works has started construction of a $2,000,000 plant at Hunter's Point, making three ship building yards to be operated by this concern.

Mr. Carl Werner Busy

Mr. Carl Werner, Phelan building, is preparing plans for a four-story and basement Masonic temple for the Masonic Temple Association of Stockton. About $200,000 will be expended on the improvements. Mr. Werner is completing the working plans for a Scottish Rite cathedral in Fresno, and contracts are being awarded for altering a frame building in Santa Rosa for Masonic purposes. Mr. Werner, associated with Mr. Alfred I. Coffey, have had their design accepted for the proposed $50,000 city hall in South San Francisco.

Grocery Firm to Build

The wholesale grocery firm of D. Debernardi & Co., Inc., 259 Front street, San Francisco, have just purchased through Messrs. Thomas Magee & Son, the lot on the east side of Battery street, south of Pacific, 69x137, upon which will be constructed a loft building to be occupied by the owners.

Addition to Garage

Mr. August G. Headman has prepared plans for a one-story reinforced concrete addition to the Olympic garage on Sutter street, near Mason, San Francisco. About $20,000 will be expended in improving the property.

Guy Lowell Doing Ambulance Work in Italy

Mr. C. W. Dickey the Oakland architect, who is designing an $80,000 country house for Mr. Gaylord E. Wilcox, the sugar magnate, to be built in the Nuu-Anu Valley, Honolulu, has received advises that his classmate and friend, Mr. Guy Lowell, famous Boston architect, who is doing war service in Italy, has been decorated for distinguished work as a member of the Red Cross ambulance corps. It will be recalled that Mr. Lowell received much favorable recognition some years ago for his competitive design of a circular court house for the city of New York. Although the building was never built the plan was pronounced one of unusual merit and originality. Among other notable works, Mr. Lowell designed the famous Boston Museum.

Three-Story Warehouse

Mr. Joseph Cahen, 333 Kearny street, San Francisco, is preparing plans for a three-story mill construction building for Mr. Milton Auerbach, and which will be erected on Second street, between Harrison and Bryant streets, San Francisco, at a cost of $35,000. Foundations and walls will be sufficiently strong to carry a fourth story when needed.

Tubercular Hospital

A one-story frame tubercular hospital, to be built near Porterville for Kings and Tulare counties, has been designed by Miss Julia Morgan, architect in the Merchants Exchange building, San Francisco. The building will be 200x30 feet and will accommodate 30 patients. Additional wings will be built as needed.

Class C Warehouse

Mr. Edward G. Bolles, Adams building, San Francisco, is preparing plans for a three-story class C brick warehouse and loft building, 67x130 feet, to be erected on the east side of Second street, south of Harrison, San Francisco, for Mr L. A. Giacobbi. The cost is estimated at $35,000.

Architect Corlett Busy

Mr. W. G. Corlett, who is attending to all the business of the firm of Reed & Corlett in the absence of Mr. Walter Reed at the front, reports much work under way and in prospect, including a municipal band stand, a $20,000 commercial garage, alterations to two banks and a residence.

Oakland Apartments

Plans have been completed by Mr. Chester H. Miller, San Francisco and Oakland architect, for a $30,000 frame apartment house to be built at Perkins and Belmont streets, Oakland, for Mrs. Rubie Osborn. There will be nine apartments of three and four rooms each.

State Building Design Approved

The National Commission of Fine Arts at Washington, D. C., has approved the Bliss & Faville design for the California State building in the San Francisco Civic Center. In a letter to Mr. George B. McDougall, State Architect, the commission's secretary says:

I am requested by the members of the National Commission of Fine Arts to inform you that, in accordance with the request contained in your letter of February 11, 1918, they have examined the exhibits relating to the San Francisco State building controversy forwarded by you and have reached the unanimous opinion that the mandatory provision of the programme as contained in paragraph five has been substantially complied with; that the State building as designed is not inharmonious with existing buildings, and that it is calculated to add an interesting and satisfactory element to the Civic Center. They have reached this conclusion after considering the largeness of the square, the distance between buildings, the dominance of the mighty dome of the City Hall, and the variations in design of the existing structures.

No further information had been received up to the time of publication.

The members of the Commission of Fine Arts are Messrs. Charles Moore (chairman), Frederick Law Olmsted, Herbert Adams, J. Alden Weir, Charles A. Platt, Wm. Mitchell Kendall, John Russell Pope, and Col. C. S. Ridley, U. S. A. (secretary).

Two San Jose Factories.

San Jose is enjoying quite a building boom from an industrial standpoint. Mr. J. S. Bogart, Mills building, San Francisco, is preparing plans for the first of five units of a manufacturing plant for the Beech-Nut Packing Company. Mr. Bogart will be in charge of construction, which will cost, complete, over $200,000.

The California Fruit Growers will spend $200,000 or more constructing a big plant in the Jas. D. Phelan tract near San Jose. Plans have been prepared by Mr. Norman S. Marsh of Los Angeles and Guy Bliss, engineer.

Addition to Sacramento Bank

Mr. Henry H. Meyers, the San Francisco architect, is preparing plans for a two-story Class A addition to the People's Savings Bank building, Sacramento. The foundations will be sufficiently strong to carry five additional floors later on, the height of the present building being seven stories.

Oakland Store Building

Mr Wm. Knowles, Hearst building, San Francisco, and Central Bank building, Oakland, has prepared plans for a one-story brick building to contain two stores and to be erected on Broadway near 23d street, Oakland, for Mr. V. Brown.

Turlock School Controversy

The trustees of the Turlock union high school district have been cited for contempt of court for awarding a contract for the foundation of the proposed new Union High School building in defiance of a restraining order issued by the court. The trouble grows out of a controversy over a site for the proposed school building. A union high school project that did not stir up a site controversy would be a real novelty.

Berkeley Architect Active

Mr. James W. Plachek, the Berkeley architect, has prepared plans for a $12,000 factory in East Oakland for the Cement Paint Company. Mr. Plachek has let a contract amounting to $7,500 for a house and garage to be erected at College avenue and Stuart street, Oakland, for Mrs. Sarah Kellar. Plans have also been drawn by Mr. Plachek for a $30,000 reinforced concrete store and hotel building for Chico.

Church Alterations

Plans have been prepared by Mr. Will D. Shea and Mr. A. J. Minton, associate, of San Francisco, for extensive alterations and additions to St. Ann's church at Funston avenue and Irving street, San Francisco. The improvements will cost $10,000 and will include a new sanctuary, pews, indirect lighting fixtures, etc.

Apartment House

Messrs. Julius Krafft & Sons, Phelan building, San Francisco, have taken figures for the construction of a two-story frame apartment house at Palo Alto for Mr. C. E. Cumberson. The same architects have made plans for alterations to the residence of Mr. J. B. Levison, president of the Firemen's Fund Insurance Company.

Oakland Architect Busy

Recent work turned out in the office of Mr. A. W. Smith, the Oakland architect, includes a one-story social hall and store building to be erected near the Municipal Auditorium on East Twelfth street, Oakland; a bungalolw at Concord for Mr. A. Johnson, and a six-room bungalow to be erected in Burlingame for Mr. A. Rotteg.

Hotel and Apartments

Mr. William Schmidt of Tracy will spend $35,000 in the construction of a two-story brick or hollow tile hotel and apartment house at Tracy for Messrs. Richie and Goldy, lessees of the Hotel Western. Plans for the building were prepared by Mr. W. H. Weeks, the San Francisco architect.

Warehouse at Santa Rosa

The Sperry Flour Co. has commissioned Mr. L. P. Hobart of San Francisco to prepare plans for altering its property at Santa Rosa into a fireproof warehouse and office building.

State Competition Jury

The four candidates from which the California State Board of Control will select one of the three architects who are to serve on the state building competition jury are Messrs. Myron Hunt and Robert Farquharson of Los Angeles, and Bernard Maybeck and Sylvan Schnaittacher of San Francisco. The other two architects will be named by the President of the American Institute of Architects, and will be drawn from points east of the Mississippi. Besides the three architects the jury will consist of the Governor, the chairman of the State Board of Control, Chief Justice of the Supreme Court, and the State Librarian, making seven members altogether. The competitive drawings are to be submitted not later than June 1st.

Back Number Wanted

New York, March 4, 1918.

Editor The Architect and Engineer of California:

We were very sorry to learn that you are unable to supply us with a copy of the December, 1917, Architect and Engineer of California. We are exceedingly anxious to have this number for our file and we therefore venture to make a suggestion to you in regard to obtaining the missing number. It is that an advertisement be placed in one of your forthcoming issues to the effect that this number is lacking from the library's file and asking if some reader would not be willing to let us have his copy. This is often done for us by publishers with successful results. We shall certainly be very grateful if you can find it possible to do this.

Assuring you of our appreciation of your courtesy in the matter, I am,

Very truly yours,

E. H. Anderson, Director.

Publisher's Note.—Please send copy direct to the New York Public Library, 476 Fifth avenue, New York.

Cannot Do Without It

Though he be ill in bed, this appreciative reader of the Architect and Engineer writes to renew his subscription, feeling that he cannot very well do without the magazine. He says:

"I am enclosing approximate statement, as the one you sent never reached me or was mislaid before I got hold of it. I surely do not want to be without your publication, so am sending enclosed remittance. I am doing this in bed—just able to sit up a little after a severe sick spell, so if the writing is poor don't blame me, but send on 'The Architect and Engineer.'

"Yours truly,

"F. P. KROUGH.

"Watsonville, Cal."

Bakersfield Fire House

Mr. Thomas Wiseman of Bakersfield, has completed plans for a new fire engine house to be erected there under a $25,000 bond issue. The building will be two stories, 42x120 feet. Sleeping quarters for the members of the fire department will be provided on the second floor.

Church to Be Rebuilt

The First Methodist Episcopal church at Madera, recently destroyed by fire, will be rebuilt at an estimated cost of $5000.

Electrical Department

Department Store Lighting*

The fixtures were done in rough plaster by the manufacturer, then dried and painted in the store itself.

THE main idea in a department store is to see the goods, and any illumination which draws the eye away from them is a drawback rather than an asset. For this reason the usual type of opalescent fixture which is designed by attractive lines to lead the eye to the main feature of the lighting, the shining globe, has certain incurable disadvantages. In the first place, the source of light itself is not a thing of beauty—in fact, it is painful to the eye to look upon it—it is rather the pattern and texture of the surface illuminated which provides the pleasurable effect. In the second place, the lighting should not attract attention at all—it should attractively connect itself with the architecture of the ceiling and, together with the beauty of show cases or floor coverings, provide merely an unanalyzed background for the goods displayed.

These factors have been carefully considered in the fixtures recently installed in the main floor of the Emporium department store in San Francisco. The great height of the ceiling (21 feet 3 inches) called for special intensity of illumination, but the glare of semi-indirect fixtures was felt to be offensive as well as markedly to increase the eye-strain of the store employes. Experiments were carried on at some length, attempts being made to light from the columns and with various types of bowls, but the expense of rewiring or of the metal and ornamental glass needed for effective fixtures was so great as to make the cost prohibitive.

The present fixture obviates these difficulties. The wiring remains unchanged, the fixtures hanging in the center of the 24 by 16 foot bays, usually over the center of the aisle. Eight 75-watt type C Mazda lamps are used in each, providing 600 watt illumination in contrast to the 400-500-watt used in the old type fixture. The light is found entirely adequate even in the men's clothing and jewelry sections, where extra illumination has always been provided hitherto. Of course special showcase illumination for the showing up of precious stones or cut glass is further provided.

The fixture provides for entirely indirect lighting, being indeed made of plaster cement which is wholly opaque. This feature of the bowl is quite unique, but has worked out very satisfactorily. The great factor to its advantage, of course, is that it is extremely inexpensive. The ingenious method of perforating the bowl so that light filtering through the interstices makes the whole appear translucent, gives the material an effect of lightness and purity of texture which is very attractive.

The bowl is 30 inches across, and is hung so that the lower edge is 29 inches from the ceiling. With the idea of connecting the fixture more definitely with the ceiling architecture, the stem was at first made considerably shorter, but experimentation showed this to be the most effective height. The fixture is quite heavy, and in order to insure safety in the installation all outlets were tested by suspending a weight of 200 pounds from them before attaching the permanent globe.

The problem of cleaning is the greatest in connection with their maintenance. In order to keep the illumination up to standard, not only the globes but the fixture itself must be cleaned regularly, as any dust on either diminishes the light reflected to a very appreciable degree. At first it was planned to dust everything carefully once a month, and a long ladder and an ordinary duster were used in the process. This resulted in too great a record of broken filaments, and now a bellows is used to better effect. It is hoped event-

*From the Journal of Electricity.

ually to have a blow pipe attachment and a convenient ladder arrangement which may be easily controlled from above, and yet not too bulky to permit of storage on the main floor. The lamps are cleaned once every four weeks, and the fixtures painted fresh every three months.

This system of lighting is carried throughout the main floor, where there are 176 fixtures in all, and is to extend to the second floor as well. Elsewhere in the store semi-indirect lighting is used except in the basement, where the records of eye trouble kept by the medical department showed the advantages of the indirect system. Although the ceiling here is comparatively low and artificial light must be relied upon altogether, there is now no greater eye-strain reported from this department than elsewhere.

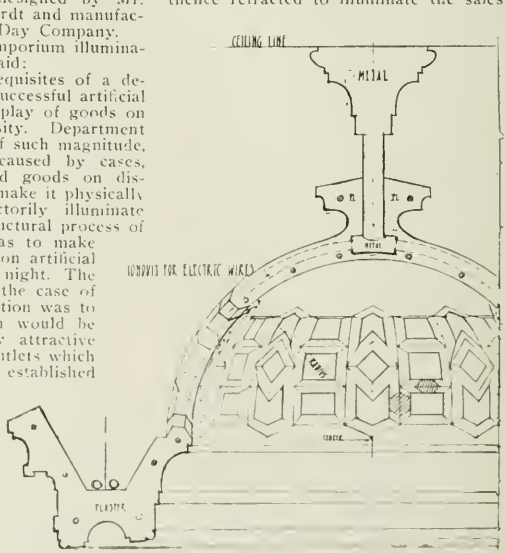
There are no shadows cast by these lamps either on the ceiling or on a horizontal surface below. The Emporium is known as the "Dome" store, which makes this fixture particularly appropriate.

The fixtures were designed by Mr. Louis Christian Mullgardt and manufactured by the Thomas Day Company.

In describing the Emporium illumination, Mr. Mullgardt said:

"The fundamental requisites of a department store count successful artificial lighting for proper display of goods on sale as a vital necessity. Department stores are invariably of such magnitude, and the obstruction caused by cases, shelving, counters, and goods on display is so great as to make it physically impossible to satisfactorily illuminate the interior by any structural process of daylight illumination, as to make it necessary to rely upon artificial lighting, both day and night. The fundamental object in the case of the Emporium illumination was to design a fixture which would be simple and reasonably attractive and adaptable to the outlets which had been previously established and used in conjunction with the usual type of fixture, with an opal bowl, metal rim, suspended on chains, the lamps being arranged within the bowl and the light filtering through as well as being reflected against the ceiling. The ceiling resembled a succession of illuminated discs, with shadow lines cast by the conduit rod and suspension chains.

"The fixture here illustrated provides an absolutely indirect system of lighting, whereby the entire volume of light is reflected against the ceiling and thence refracted to illuminate the sales



The wires are led down the stem to the junction box, thence through conduits along the ribs of the fixture to the trough, where they terminate in a socket.

department. The visible illuminated surface on the ceiling shades off, from highest degree of intensity, immediately above the fixture, to an undeterminable distance in all directions without creating a disc or shadows within the area. The dome of the fixture is filigreed to admit the light within, giving the fixture a transparent appearance of lightness. The illumination created thereby falls equally from all sides to the sales space below and casts no shadows on a horizontal surface.

"The fixtures are made of plaster of paris, with the conduits concealed within the structure. The exposed surfaces are of a light ivory color, to match the ceilings and to make them as inconspicuous as possible. They may be made any color, or liberally decorated if desired, without altering the fundamental principles of indirect illumination."

The Architect and the Electrical Man

By H. P. PITTS in Journal of Electricity

It is an acknowledged fact that upon the original wiring of a house and the provision for base outlets and the like, depends to a great extent the subsequent use of electrical appliances in that home. From the electrical man's standpoint, it is essential that the architect, who has so much to do with planning homes, should know what can and cannot be done along electrical lines—and the architect himself welcomes information which will be of value to his client. For example the following are some of the instances where the electrical man may help the architect: Proper location of meters and switchboards; convenience to central station poles; engineering elements of good lighting, provision for later use of appliances.

THE idea that we have, with reference to the relations betwen the architect and his client, is that the former is requested by the latter to produce satisfactory plans and specifications for a building—a home for instance. The next move is to put these into reality, seeing to it that every detail is lived up to by the contractor, and that the building is turned over to the owner in perfect detail —presto—it is expected that when the home is first occupied by the owner there shall be nothing lacking in comfort, view, surroundings and conveniences. This is the architect's business and is what he is spending time, patience and money upon, and, as these three items are the only real ones that are worth while saving these days (outside of food), it is essential that he look for assistance in every possible direction.

In the designing of a home, it must be a puzzle to determine which features shall be the most important, and whether or not one has to be sacrificed to accommodate another. The location of certain rooms with relation to one another may interfere with the electrical features, in that it may cause the meter and switchboard location to be placed at a point directly contrary to where it might be advisable to bring in the wires for lighting and power. Experience tells us that this one feature could be greatly improved upon, and that had the architect discussed this apparently simple matter with the contract manager of the central station, information would have been furnished which not only would have saved unnecessary expense, but would have made smooth sailing for the electrical contractor whose business it is to live up to specifications. This is a very vital matter, and it should not be presumed from the mere fact that there is a pole standing in front of the premises that it is a central station pole; it might be a telephone pole, or again, might not be the pole from which the energy could be conveniently taken. A great deal of this trouble has been fought out between the central station and the electrical contractor, when all controversy might have been eliminated had the former's representative been called in when the specifications were being prepared. Particularly is this true with reference to underground services.

Within the house the matter of good illumination is of very vital importance, probably not so apparent to those who stay at home all day, and who compliment the architect on the arrangement of the rooms and other conditions to make the view most enchanting, as to the one who leaves the house in the morning before the view is apparent, and who arrives home after the view has faded. Mostly, what he sees of his beautiful home is what the lighting effect gives it. His temperament should be studied and considered, and the central stations have provided means whereby the best information may be given as to good lighting.

Electric apparatus within the house: It has come to be generally agreed that baseboard sockets distributed about the house are as essential as that the house should be wired for lighting. The conveniences of labor saving electrical devices are today solving many a former serious household problem. The cost of household labor, together with the scarcity of it, is driving many people from good homes to the congested apartment houses. Were outlets properly placed in all modern homes, not only would their presence suggest the purchase and sale of labor saving electrical devices to a greater degree, but would encourage the housewife to attempt her work in her own home. Carefully prepared statistics disclose the fact that in San Francisco in the past year, hundreds of homes have been abandoned for apartment houses, and a survey of these vacant houses discloses the fact that there was no provision for attaching plugs for electrical heating devices, vacuum cleaners, washing machines and food preparing appliances, etc. People simply could not get help, and rather than drudge, they took the next best means of existence, that of giving up their otherwise comfortable

homes for the apartment houses. The lesson to be learned from the conditions are obvious, and need not be elaborated upon further.

Now then, a word to the central station representative. You are anxious to get in touch with the architect, you would like to be his friend because you can be of mutual benefit to each other. However, you must not think that you are at liberty to rush into his office at any time of the day and demand an audience, for he is a busy man, not busy in the sense that a restaurant man may be when lunch is being served, but, being an artist, his mind has to be concentrated on very artistic matters and must not be disturbed. It is necessary, however, that he have his business hours, and if you can make your subject interesting enough he will have a certain hour during the day that he will see you, particularly if you can convince him that he needs you, and it must be apparent to you that with all of the material that you have at your command, you can make yourself welcome.

Indeed, this closer spirit of co-operative helpfulness now so closely engendered among all branches of the electrical industry may well be extended to the architect and his labors. In this broadened sphere of helpfulness great good must be the inevitable outcome.

Earthquakes Predicted

Earthquakes that rocked Southern California last month were predicted April 1st by Professor Albert F. Porta of Oakland, who formerly was Professor of Architecture at the University of Turin, Italy, and Professor of Applied Mathematics at the Santa Clara University, Santa Clara.

The prediction which Professor Porta publishes monthly said, in the April issue:

The earthquake period between April 10th and 17th will be produced essentially by the electromagnetic energies gushed out from the solar disturbances generated by the opposition of various planets. A very violent earthquake will occur, probably affecting the shores of the Mediterranean-Adriatic seas, the Japan-Chinese seas, or some place on the Pacific ocean from California to Central America. A moderate repetition of this earthquake will occur in the period between April 19th and 24th.

New Home for Newspaper

Messrs. Wolfe and Higgins of San Jose have completed plans for a brick newspaper plant for the Santa Clara News. The same firm has let contracts for new undertaking parlors on Second street, San Jose, and a two-story brick building at Market and St. John streets in the same city.

Now, Listen to This—

It's a far cry from beets to cement, but—

Popular Mechanics says that there is a by-product obtained in the manufacture of beet sugar from which cement can be made, according to a Paris report. In boiling beets to make the sugar there collects a thick scum which has been found to contain considerable carbonate of lime. The amount of calcium carbonate which can be obtained from 100,000 tons of beets is about 6,000 tons. When sufficient clay is added and the substance burned, a high grade of cement is obtained.

So perhaps the happy day will come when the contractor will buy a farm, plant it to sugar beets, sell the beets at a high figure for the sugar they contain, and then after he gets his check, store up the calcium carbonates for use in the manufacture of concrete buildings and highways.

It'll be a great time for contractors. However, for the present the cement companies will undoubtedly keep on doing business at the same old stands.—Improvement Bulletin.

Concrete Lumber in House Construction

BOARDS of concrete, with joists, rafters and stair-frames of the same materials, are used in the construction of a novel building in Los Angeles, California, the whole being set upon a concrete foundation, says the Scientific American. Though put together after the manner of a frame structure, the building is as fireproof and durable as the more common types of cement houses, but it requires less material and is lighter in weight.

The various parts are poured into forms on the ground near the site, and in that way the danger of breakage is eliminated. The clapboards are poured in sets of ten, the forms being securely clamped together, and the cement allowed to harden in them for several days. Then they are taken out and allowed to cure before being set up. This is done while the preliminary work is going on, such as excavating and laying the foundation.

The joists, rafters and other parts are formed in the same manner, and various types of reinforcing are used for each. The boards are reinforced with mesh like chicken wire, while the timbers have iron rods of varying thickness to strengthen them. These are allowed to project at one end in order to fit into corresponding holes in other timbers, so that the whole framework dovetails. The method of attaching the boards to the 2x4's is with nails, and nail-holes are bored into the cement boards before they have set by running a wire through them. As the cement timbers will not take the nails, a strip of wood about an inch and a half thick is wired to the cement scantling.—Improvement Bulletin.

School Contract Awarded

L. V. Perry of Concord has been awarded the contract for building the addition to the Concord high school, from plans by Messrs. Stone & Wright, Stockton.

Domestic Engineering

Plumbing and Sanitation

The Plumber Appreciated

"Did you ever," said he, "know a plumber who had grown rich?"

We stood in the kitchen. Outdoors it was a wonderful winter morning, snow-white and sparkling, felt rather than seen through frosted windows, for the mercury last night had dropped below zero, and, although reported on the way up, was not climbing with real enthusiasm. On the floor was a little sea of water, in shape something like the Mediterranean, with Gibraltar out of sight under the kitchen sink. The stove (unfortunately) had been lighted; and a strange, impassive boy stood beside it, holding in pendant hands various tools of the plumber's craft. The plumber stood in the Mediterranean. And I, in my slippers and bath-robe,—a foolish costume, for the sea was not deep enough to bathe in,—hovered, so to speak, on the edge of the beach.

I suppose I wished to impress this plumber with my imperturbable calm. Upset as I was, I must have realized the impossibility of impressing the boy. Swaggering a little in my bath-robe, I had said something jocular, I do not remember just what, about the rapid accretion of wealth by plumbers. He lit his pipe. "Did you ever," said he, "know a plumber who had grown rich?"

Now, until that winter, I had never thought of the plumber as a man in many respects like myself. One may winter for years in a city apartment without meeting a plumber, but hardly without reading a good many humorous trifles about them in current literature; and my idea of this craftsman had been insidiously formed by the minor humorists. Summer, in my experience, had been a plumberless period, in which water flowed freely through the pipes of my house, and gushed obligingly from faucets at the touch of a finger. It was like an invisible brook; and, like a brook, I thought of it (if I thought of it at all) as going on forever. Nothing worse happened than a leak at the faucet. And when that happens I can fix it myself. All it needs is a new washer.

I run down cellar and turn off the water. I run up from the cellar and take off the faucet. I put in the new washer which is like a very fat leather ring for a very thin finger, and screw on the faucet. I run down cellar, turn on the water, run up from the cellar, and look at the faucet. It still leaks. So I run down cellar, turn off the water, run up from the cellar, take off the faucet, make some slight alteration in the size, shape, or position of the washer, put on the faucet, run down cellar, turn on the water, run up from the cellar, and look at the faucet. If it still leaks (as it is rather to be expected), I repeat as before; and if it then leaks (as is more than likely), I run down cellar, turn off the water, run up from the cellar, take off the faucet, make some slight alteration in the size, shape or position of the washer, put on the faucet, run down cellar, turn on the water, run up from the cellar, and look at the faucet. Perhaps it leaks more. Perhaps it leaks less. So I run down cellar—and turn off the water—and run up from the cellar—and take off the faucet. Then, talking aloud to myself, I take out the new washer throw it on the floor, stamp on it, kick it out of the way, put in another new washer, put on the faucet, run down cellar, turn on the water, run up from the cellar, and look at the faucet. If (and this may happen) it still leaks, I make queer, inarticulate, animal noises; but I run down cellar, turn off the water, run up from the cellar, and take off the faucet. Then I monkey a little with the washer (still making those queer animal noises), put on the faucet, run down cellar, turn on the water, run up from the cellar, and look at the faucet. Sooner or later the faucet always stops leaking. It is a mere matter of adjusting the washer; any handy man can do it with a little patience.

Winter in the country is the time and place to get acquainted with the plumber. And I would have you remember, even in that morning hour when the ordinary life of your home has stopped in dismay, and then gone limping toward breakfast with the help of buckets of water generously loaned you by your nearest neighbor,—rarely, if ever, does he carry his generosity so far as to help carry the buckets,—that because of this honest soul in overalls, winter has lost the terrors which it held for your great-grandfather.

Revisit your library, and note what the chroniclers of the past thought about winter—"this cousin to Death, father to sickness, and brother to old age" (as Thomas Dekker bitterly called it; and well would your great-gandfather have agreed with him), when "the first word that a wench speaks on your coming into a room in the

morning is 'Prithee send for some faggots.'" It is bad enough when (to adapt Dekker's sixteenth-century phraseology) the first word that a wench speaks on your coming into a room in the morning is "Prithee send for a plumber"—but how seldom it happens! And because we can send for a plumber, our attitude toward winter is joyfully changed for the better: lovely autumn is no longer regarded as melancholy because winter is coming, nor backward spring esteemed beyond criticism because winter is over.

Those good old days, after the sun had entered Capricorn, were cold and inconvenient old days. Observe great-grandfather: all his plumbing was a pump, which often froze beyond his simple skill in plumbery; and then he drew water from the well in a dear old oaken bucket (as we like to think of it), emptied it into other buckets, and carried it by hand, even as a man now carries the water loaned him by his generous neighbor, wherever the useful, unintoxicating fluid was needed. No invisible brook flowed through his house, and gushed obligingly at faucets hot or cold according to great-gandfather's whim; no hot-water pipes suffused his dwelling with grateful warmth. These are our blessings—and it is the plumber with only a boy to help him, who contends manfully against the forces of nature, and keeps them going. For the life of the house depends nowadays on its healthy circulation of water; and when the house suffers from arterio-sclerosis, the plumber is the doctor, and the strange, impassive boy is the trained nurse.

Sometimes in an emergency he arrives without this little companion: I have myself, rising to the same occasion, taken the boy's place. I was a good boy. The plumber admitted it. "Fill th' kettle again with hot water off th' stove," said he, over his arched back as he peered shrewdly down a pipe to see how far away it was frozen, "there's th' good boy." Thus I know that the boy is not, as our minor humorists would have us believe, a mere flourish and gaudy appanage to the plumber's autocratically assumed grandeur. His strange, impassive manner is probably nothing more or less than concentrated attention; as if he said, with Hamlet, "Yea, from the table of my memory I'll wipe away all foolish, fond regards, all saws of books, all forms, all pressures past, that youth and observation copied there; and thy commandment all alone shall live within the book and volume of my brain, unmixed with baser matter. Yes, by Heaven!" Even in putting in a new washer, I should do better with a boy.

The most nervous and conscientious plumber, I tell you, must at intervals appear, to an observer unacquainted with the art and mystery of plumbery, to be proceeding in a leisurely and perhaps idle fashion. The most methodical and conscientious man, plumber or not, will occasionally forget something, and have to go back for it. The most self-respecting and conscientious minor humorist, after he has exhausted his witty invention making a joke on a plumber, will try to sell it for the highest possible price. And if I, for example, am a little proud of my ability, greater than the plumber's, to write an essay, how shall I accuse him of arrogance if he is a little proud of his ability, greater than mine, to accomplish the more necessary feat of thawing a frozen water-pipe? He has a heart.

When I was a plumber's boy myself, I walked with my boss to his office in the village to get a tool. It was a Sunday afternoon: I remember that a rooster crowed afar off, and how his lonely clarion enhanced and made more gravely quiet the peace of the Sabbath. And the plumber said "I wouldn't have felt right sitting at home by the fire reading the paper, when I knew you was in trouble and I could pull you out." He had come, mark you, in his Sunday clothes; he had come in his best, not pausing even for his overalls, so that, in our distressed, waterless home, the lady of the house had herself encircled his honest waist with a gingham apron before he began plumbing. And in all the world there was nobody else whom we would have been so glad to see.

And so, bowing, with my left hand over what I take to be the region of a grateful heart, I extended him this praise of plumber. No plumber came over in the Mayflower; but think not, for that reason, that he is a parvenu. He is of ancient lineage—this good fairy in overalls of our invisible brooks. The Romans knew him as the *artifex plumbarcus*. Cæsar may have interrupted the revision of the Commentaries to send for him. He disappeared, with civilization and water-pipes, in the Dark Ages; he came back, with civilization and water-pipes, when the darkness lifted. Neglected by art, disregarded by Romance, and unconsidered by the drama, these rich and entertaining expressions of life are as nothing when his presence is called for.

> We may live without painters
> Or writers or mummers,
> But civilized man cannot
> Live without plumbers.

He, too, should have his statue, not of bronze, marble, or granite, but of honest lead with two figures—the Plumber, holding aloft his torch, and the Plumber's Boy, strange, impassive, and holding in his pendant hands a monkey wrench and the coil of flexible tubing with which his master cunningly directs hot water into the hardened arteries of a suffering house. And on his pedestal I would carve the motto,—

"Did You Ever Know a Plumber Who Had Grown Rich?"—(From the Contributors' Club in the Atlantic Monthly.)

"What Fools These Mortals Be"

An able honest man, if poor, is a damphool;
An able dishonest man, if "smart," is sometimes rich;
But while an able, honest man, if smart, should be rich, an
Able crook however rich, is nothing but a damphool!

WILLIS POLK.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Contracting: Three Ills and the Remedies

"AT a recent meeting of the Wisconsin Master Builders' Association at Watertown, Mr. W. A. Klinger, a contractor of Milwaukee, addressed one session on the status of the contracting profession. He analyzed the ills of the profession into three major afflictions: First, the profession itself has no standing; second, our compensation is too small; third, we are poor business men. He then took up the cures for these in the same order, and his remedies follow:

"Our craft is the oldest in the world. It began when man first built for himself a shelter in the trees. The progress of civilization is marked by the progress in the art of building. The proudest creations of which the world boasts are the structures that have been possible by the genius of the builder. Excepting only the ruthless waste of human life, the world's greatest loss, due to the world war, lies in the needless destruction of the wonderful cathedrals and public structures of France and Italy.

"Remember that contracting is a real man's game, and it takes a real man to play it.

"Look about you at your competitor and examine the type of man he represents. You will find something sturdy, something of the fighting man, and much of the leader in him. No other business presents such a complexity. We are manufacturers, and our product covers a wide variety. We are merchandisers, selling directly to the consumer. No profession is more necessary to humankind. The ability to take a vast assortment of various materials, mostly products of nature, and mold them into a residence, a business building or a factory should make us proud of the fact we are 'builders.' Pride in such a profession is a pardonable offense.

"Taking pride in our profession, let's turn out better products. The more we put the stamp of quality on our work, the better the reaction on the profession. The more we educate the public to quality, the harder the course of the shyster. Educate him to your own standards, or hound him out by making the continuation of his practice impossible. Exposure is a sure cure for foul practice.

"Architects who are employed as experts by owners should be convinced that it pays both them and the owner to select contractors of standing for their work.

"It seems to me that we have all laid too much emphasis on price and too little on quality. We have strong hopes that the system of licensing architects will improve the type to such a point that the argument of quality may have some effect.

"To be a contractor will mean more when it is a little more difficult to become a contractor. At present anybody with nerve and the first installment of equipment can call himself a builder. Any one of our foremen who thinks he knows more than his boss—and they are all firm in that opinion—becomes a contractor. He operates for a while as a shyster, then either blooms out and justifies his start, or, in nine cases out of ten, kills a whole lot of business for us and then goes to the wall. But there is always somebody to take each vacant place.

"There prevails an unjustifiable extension of credit on the part of the material man. The material man unhesitatingly sells to any contractor, knowing he can get protection by virtue of the existing lien law. He quotes to poor pay just as he does to the man who discounts. If he didn't have the iron-clad protection of the lien law and sold to contractors according to their credit ratings and their ability to pay, the shyster and the cut-price competitor would have to have a working capital before he could start as a contractor. Consequently, he wouldn't start. We can render great assistance, and improve our business standing vastly, by unhesitatingly complying with requests for financial statements. Financial statements are used more and more in all lines of business.

"Besides financial responsibility, the man who aspires to the building profession should be a real builder. An ability to nail a 2x4 does not constitute a builder. I believe a system of State licensing, much as our State law licensing architects, should be worked out. The architects expect the licensing of architects to do much to improve the personnel of their profession. A similar law for builders could not do otherwise than improve the personnel of our profession. The test of an applicant for a license as a builder should be responsibility and character, experience as a builder for others, training and general knowledge, reading of plans, etc. The designation 'contractor' or 'builder' would then mean something. It would mark a man as experienced and able, a

real builder, and give tone to the profession, by an exclusion of the unreliable, the ignorant and the unworthy.

"We can then cure illness No. 1 and improve the standing of the profession by three means:

"1. By taking and showing pride in the profession.

"2. By dwelling on quality and educating the public and the architect to it.

"3. By an elimination of the undesirable in the profession by means of legislation, namely, a change in the lien law and a system of State licensing of builders.

"The remedy for illness No. 2, that the compensation of the contractor is too small, is very plain. Simply charge more for your services. Being in a business in which you have every reason to take great pride, do not hold yourself too cheaply. When you figure work, do not forget the personal service you render. You have, by virtue of constant practice and much experience, become an expert in your line, and your compensation should be fixed accordingly. Remember, by virtue of your investment, the equipment you own and your working capital, you are entitled to a margin of profit. Over and above that, you are entitled to a salary commensurate with your experience and ability. If you have made yourself an expert, if you have devised systems of doing work more cheaply than others, you are entitled to profit by your ingenuity. Why work up an organization better and more efficient than the other fellow, and then take work so much below his price that the owner alone benefits by your ability? Make your ability earn dividends for yourself. Make it earn for you a good annual salary, independent of the return on your investment.

"The third illness which our diagnosis reveals, and by far its most serious affliction, is the fact that contractors are poor business men.

"There are three essentials to good business. Produce a quality product and know what your product cost. Second, sell that product at a price with a fair margin of profit. Third, after the delivery of that product, collect the price agreed upon. Do we measure up to these requirements as good business men? I think we do not.

"In the first place, most of us do not know what our products cost. We can find out our costs only through a good cost-keeping system. An occasional checking up of this or that man, at this or that particular piece of work for a short period, does not constitute a cost-keeping system. The costs must extend over a period of time, must be kept under both favorable and adverse circumstances, must represent the efforts of more than one man, and should represent costs on the same process repeatedly, so as to get a good average value. A cost-keeping system should be accurate or it is worthless. It should be simple and free from too involved analysis. We have known of systems that wound up at the conclusion of a job with a pile of reports a foot high, none complete in itself, all waiting for time for a month or two to dig through them, complete the calculations and summarize. And the results desired have been lost in a maze of unimportant data. Simplicity should rule. Interest should be paramount. The close of each pay-roll should mark a checking up of the work performed.

"Having accurately ascertained the costs of the work, do not let your judgment sway the figures resulting. When estimating work, use the results of your cost system, tempered by circumstances peculiar to the work estimated upon. Make up a figure representing the total net cost of the work. To that should be added the insurance costs, bond costs, equipment, expenses and the overhead. We have all heard enough about overhead to know what it means, and to know what it consists of. But, curiously, we seem to forget its existence when we make up an estimate. Overhead exists, and if it does not exist by virtue of an item in your costs, it is the parasite on your profit. We all have overhead expense. Even the man who carries his business in his vest pocket has overhead. Determine its relation to your business and charge accordingly.

"Having determined the gross cost, add a reasonable profit. That profit represents the only variable in your estimate. The gross cost when scientifically and accurately calculated should be in your judgment a fixed quality. The fact that you want a job badly does not affect the cost of that building. The fact that you need the work to keep an organization together does not affect the cost of the building. Those considerations should affect only the profit item of your estimate.

"The wide variation in contractors' bids is traceable to the fact that we let a desire for a contract influence our estimate of the cost. I can not emphasize too much the point that it takes a certain amount of labor and material to do a certain piece of work, and, whether we want the job or not, that amount of labor and material is necessary, and is not influenced one iota by our need for the work. Let such a need influence your profit item only.

"Having once made the estimate of the work, that estimate, if properly made and based on a good cost system, represents your best judgment of the value of the work, and should, of course, be your tender for the work. The real test of business ability comes between the time your tender is given to the architect and the awarding of the contract. I think it is

safe to say that more money is lost by the contractor in the office of the architect than out on the work. I am sure you will agree with me if you will recall how often you have been met with the old, old story: 'Jones, I'm sorry, but you're high. I'd like to give you this work, and so would the owner, but the job runs a little high, and we've got a better price. You had better take these plans and look over your bid. See what you can do.' And when you take those plans, or when you ask, 'How much lower is his figure?' that is the first day of your Waterloo. And in that battle of the second and third day you lose. You cut your price to meet that of a competitor, or you cut your price that was already low. In either event, you lose.

"If we had a slate of the ethics of the profession of contracting, Rule No. 2 on that code would be: 'Let your first tender for a piece of work be your final tender.' We might occasionally lose a contract, but those we got would be at our price, and not at some competitor's price. And in the end we would all be getting the price that our best judgment fixed as the reasonable price on the work.

"Having agreed upon a price, your battle is only half won. Contractors have for years been signing documents in which they signed away every equity they have, and placed their entire fate in the hands of a third party, paid by the owner. Contracts making the architect the interpreter of the meaning and intent of his own plans and specifications, and making him the sole judge of their execution, in his employer's behalf, are eminently unfair. The road to the use of an eminently fair contract has been made easy for us, if we but adopt and insist upon the use of the Standard Documents of the American Institute of Architects, as approved by the National Association of Builders' Exchanges, of which we are all members. These documents have been prepared by joint committees of these bodies, with the assistance of the best legal talent. They have for their basic thought justice to both contracting parties and recourse to arbitration for all disputes. At present in their third edition, they are not perfect, but are far superior to anything we have had before, and represent the best and most recent thought on the subject.

"Having signed this contract, execute it according to its tenets. Where written notice is required from the architect or owner, insist upon such notice. Where written notice is demanded from you, give such notice.

"For the period of the war the building industry will probably not boom, in fact, it will probably travel very slowly. The fight for work will be keen, the temptation to grab it at any cost will be strong, but that temptation must be fought. It is far better to repair a machine while it is idle than to attempt it on the go. If not busy building a building, let's build a profession. Let us carefully administer those cures so that when the rush of business comes, as it surely will, our profession, through mutual effort, has lifted itself to a higher plane. Organized effort will effect the cure."—Western Contractor.

Architect to Have New Home

Mr. Edwin J. Symmes, Pacific building, San Francisco, has completed plans and construction has been started, for a two-story frame and stucco residence at Pearl street and Buena Vista avenue, Alameda. Upon completion Architect Symmes will occupy the house, which will cost, complete with garage, close to $5,000.

Oakland Industrial Plant

Mr. Frederick Whitten will be manager of construction of a group of brick industrial buildings for the Alamo Baking Company in Oakland. The plant will entail an outlay of $150,000. Work will start June 1 from plans by a Chicago architect.

Sloan Valve Moves Offices

Mr. E. C. Whalen, representing the Pacific Coast branch of the Sloan Valve Company, with main offices and factory in Chicago, has moved his offices from the Wells Fargo building to rooms 325-327 Monadnock building. The old phone number, Sutter 2548, has been retained.

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What Should the Designer of a Concrete Building Know About Its Cost?

WITH the desire to arouse the interest of the designer to a keener desire to know the cost of his designs, Mr. Clayton W. Mayers of the Aberthaw Construction Company of Boston, in a paper prepared for the American Concrete Institute presents in a very practical way many of the factors of economy in the design of concrete buildings.

"The average concrete designer," frankly says Mr. Mayers, "makes no claim to being an estimator. In fact, he does not think it is necessary to be an estimator even of the materials with which he works. It is a fact that a large majority of men employed in the design of concrete buildings have hardly any idea of the cost of the work they are laying out, and what is more, they do not know how to find out this for themselves. Surely, if an engineer designed a structural steel girder he could tell with reasonable accuracy what it would cost by computing the weight and getting the market price for the structural steel and the labor cost of erection. Estimating the cost of concrete work is a little more complex, but each step is very similar and the process is the same.

"A designer of concrete structures should think continually of costs, but in order to think intelligently of the cost of his work he must know how to calculate approximately the cost of his designs. In no other way is he able to determine which one of his studies will serve his purpose at the least expense.

"It should be borne in mind that in making designs for comparative costs, it is not necessary to work to as great a degree of accuracy as for the finished plans. Rough designs, accompanied by rough sketches, will furnish enough information for his study. In case the comparative costs of two schemes should work out the same, a more careful design might become necessary. A little practice on the part of the designer will soon reveal to him to what degree of accuracy he must work in order to get satisfactory results.

"The process of estimating these various designs for comparative cost purposes is not nearly as difficult as may be supposed. Concrete is measured by the cubic foot or cubic yard, forms by the surface measurement in square feet and reinforcement by the pound or ton. After the quantities have been calculated for the various designs, unit prices are fixed and the total cost of the member estimated. It is usually here that the engineer throws up his hands. In fact, it is very likely that he knows but little about the prices of this class of material and labor, and in his rush of work he has not kept in touch with the fluctuations, and feels he does not have time to inform himself properly on this subject. Again, it should be understood that it is not necessary to fix absolutely accurate unit costs to these quantities, in order to obtain reasonably accurate cost comparisons. As long as the same unit costs are used for similar types of work in the various designs, the comparative costs will be surprisingly accurate.

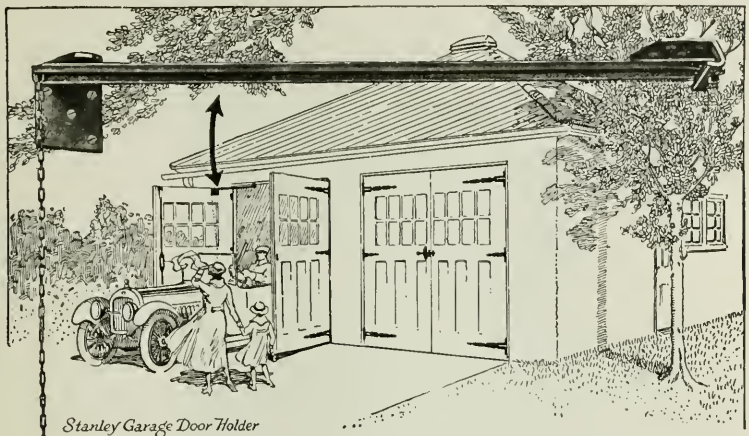
"In fact, some of the unit costs may be in error 25 per cent or 30 per cent, and yet the resulting costs will show unquestionably which type of construction should be used. For example, the quantities for two designs (a) and (b) for an interior column are given here and these quantities are priced for current normal conditions, under 'Estimate A,' and another estimate for the same quantities with the unit prices grossly in error is shown in 'Estimate B.'

Estimate A. (Scheme a.)	
Conc. (1:1½:3) 52 cu. ft. at 36½c	$18.98
Forms, rd. steel	15.00
Reinfct. (vert.), 514 lb. at 5c	25.70
Spirals, 264 lb. at 5½c	14.52
Lost fl. space, 7 /10 sq. ft. at $2.75	1.92
Total	$76.12
(Scheme b.)	
Conc. (1:1:2), 52 cu. ft. at 43c	$22.36
Forms, rd. steel	15.00
Reinfct., 245 lb. at 5c	12.25
Spirals, 264 lb. at 5½c	14.52
Lost fl. space, 7 /10 sq. ft. at $2.75	1.92
Total	$66.05
Estimate A. (Scheme a.)	
Conc. (1:1½:3), 52 cu. ft. at 27c	$14.04
Forms, rd. steel	19.00
Reinfct., 514 lb. at 3¾c	19.28
Spirals, 264 lb. at 4c	10.56
Lost fl. space, 7 /10 sq. ft. at $3.50	2.45
Total	$65.33
(Scheme b.)	
Conc. (1:1:2), 52 cu. ft. at 32c	$16.64
Forms, rd. steel	19.00
Reinfct., 245 lb. at 3¾c	9.19
Spirals, 264 lb. at 4c	10.56
Lost fl. space, 7 /10 sq. ft. at $3.50	2.45
Total	$57.84

"It will be seen that although the comparative total costs of the schemes (a) and (b) are entirely different in the two estimates, the resulting comparative costs both in 'Estimate A' and 'Estimate B' show conclusively the design (b) is the cheaper column to build. It will also be noticed that the percentage of cost saved by using design (b) is about the same in both estimates. However, the alert engineer will soon become as interested in having his unit costs in accordance with current prices of material and labor as he is in having his design correct."—Cement and Engineering News.

Modernizing Six-Story Building

Mr. Geo. W. Kelham, the San Francisco architect, has completed plans for extensive alterations to the six-story Calkins building at Battery and Commercial streets. The improvements will include new elevators, entrance stairway, entrance vestibule, painting, wiring and plumbing. Construction work will be handled by the P. J. Walker Company.



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Arizona Architectural Competitions

Two architectural competitions for state buildings are to be held in Arizona, one for the selection of an architect for the proposed addition to the state capital at Phoenix (plans to be submitted by June 4, 1918), and the other for the selection of an architect for a woman's dormitory to be built at the Arizona State University at Tucson (plans to be submitted by May 31). Three prizes, $1000, $500 and $250, respectively, for first, second and third choice, are offered for plans for the addition to the capitol, for which $125,000 has been appropriated. This competition will be held under the direction of the Commission on State Institutions.

Three prizes, $500, $300 and $200, respectively, for first, second and third choice, are offered for plans for a girls' dormitory at the state university at Tucson, for which $100,000 has been appropriated. This competition is under the direction of the regents of the university. Both competitions will be in compliance with the Arizona state law which requires the architect to give a $5000 bond guaranteeing the cost of the building for which plans are submitted. For further details address Mr. Chas. R. Osborn, Commissioner, Phoenix, Arizona.

Takes $70,500 Liberty Bonds

The Standard Varnish Works of New York and Chicago, with a Coast branch at 55 Stevenson street, San Francisco, in charge of Mr. Edward Millhauser, and which company is known all over the world as the manufacturers of Elastica Varnishes and Satinette White Enamel, contributed $70,500 to the third Liberty Loan. The San Francisco office alone subscribed to $5,000 worth of bonds.

Additions to Sanatorium

Plans for additional wings to the Oak sanatorium, near Los Gatos, Santa Clara county, have been prepared by Mr. Sam L. Hyman, architect, with offices in the Crocker building, San Francisco. Bids were recently taken for a wing, 150x30, to be used as servants' quarters. The improvements will also include a new sewage system and septic tank.

Modern Apartments Planned

Estimates have been taken by Mr. William E. Milwain, the Oakland architect, for alterations and a one-story addition to a brick store and rooming house on San Pablo avenue, and which is to be converted into modern apartments at a cost of $30,000.

Log House for Country

Mr. E. W. Cannon, Central Bank building, Oakland, is preparing plans for a 12-room log house to be built in Trinity county, California, for Mr. Brousse Brizard of Arcata. About $25,000 will be expended on the improvements.

Architect Invents Auto Bed

Mr. W. A. Newman, the San Francisco architect, has invented an automobile comfort bed which will undoubtedly be much appreciated by lovers of out-door life who will find in the comfort bed a convenient resting place when touring this summer, and at the same time they will be able to keep down their hotel bills. The bed may be carried on the side or rear of the car and requires very little space. It is neither cumbersome nor unsightly. It may be tied up to about the size of a golf bag outfit or left loose and placed under the seat. It is a great convenience for fishing parties and hunters. It makes no difference where you happen to be when night comes. You can make up the Auto-Comfort bed in a jiffy, retire in perfect ease, and be protected from the weather, snakes or insects. Made up, the bed is approximately 6 feet 5 inches long and the width of the car—a

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Further information may be obtained by addressing the Newman Auto-Comfort Bed Co., 556 Sixty-first street, Oakland.

Huge Granite Rock

A thirty-five ton block of granite was rolled a distance of eight miles from the quarry to the railroad station at Llano, Texas, there being no other available method of transporting the block on account of its great size and weight. Logs and timbers were tied with wire ropes around the block, fashioning it into a huge drum. The mass was moved by unwinding a wire rope previously wrapped around it, the wire being attached to a steam drum mounted on a motor truck that followed the path of the rock. Several small streams were crossed by the rolling rock without difficulty. The block, when finished, was seven feet square and ten feet long.—Southwest Contractor and Builder.

Wholesale Grocery Building

Messrs. J. P. Kremple and W. E. Erkes, 415 Henne building, Los Angeles, are preparing plans for a wholesale grocery building to be erected at Santa Barbara for the Channel Commercial Co. It will be a two-story and basement structure, 80x100 feet, and designed to carry two additional floors. It will have reinforced concrete basement walls and columns, cement floor, reinforced concrete first floor, brick walls above with blue brick facing, tile cornice, heavy mill construction, shower baths, furnace, plumbing, lavatories, elevator, reinforced concrete vault.

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How to Make Damp Basements Dry

The following is furnished by the Sandusky Cement Company of Cleveland, Ohio, represented in California by the Pacific Building Materials Company, Underwood building, San Francisco:

When the necessary precaution has not been taken during construction to damp-proof a basement or to make a cistern water-tight, permanent waterproofing results can be secured by following these simple directions:

If already plastered and it has not adhered to wall in places, which can be determined by striking with a hammer and noting a "dead" sound, remove old plaster. Roughen the surface to be treated by chipping with a cold chisel or similar instrument, and rake brick joints to a depth of three-quarters of an inch, to obtain a bond for the new plaster coat, and clean with a heavy wire or stiff broom to remove all dirt and dust. Clean walls and floor thoroughly by scrubbing with a good stiff brush and water, or preferably wash the surface with a solution of one part hydrochloric acid to ten parts water, allowing this to remain about ten minutes, and then thoroughly rinse off the surface with clear water (with a hose under good pressure) to remove the chemical and loose particles resulting from the action of the acid.

To the cleaned saturated surface (or after wetting the surface thoroughly) apply a coating of neat cement and water, to which 2 per cent of Medusa waterproofing has been added, mixing to the consistency of thick cream. This grout can be applied with an ordinary brush, but should not be used very far in advance of the plastering, so that the grout paint will not have an opportunity to harden before the plaster is applied.

The plaster coat should consist of one part Portland cement, one and one-half parts clean sharp sand, and two pounds Medusa waterproofing powder or paste to 100 pounds cement. The waterproofing powder should be thoroughly mixed dry with the dry cement before the addition of sand and water, or Medusa waterproofing paste should be mixed with the water used. Better still, use Medusa waterproofed Portland cement, which is the regular Medusa Gray Portland with Medusa waterproofing ground in the process of manufacture.

Apply the plastering mortar one-half inch to three-quarters inch thick on the walls and about two inches thick over the floor. Special care should be taken to bond the wall and floor coatings, so as to make the waterproofed work continuous over the entire surface.

No more mortar should be mixed than can be used within thirty minutes. It can be applied with a steel trowel, and should be thoroughly worked at once with a wood float to make it as dense as possible. Final finishing may be done with a steel trowel, trowelling for not more than one minute and then leaving undisturbed. Excessive trowelling will result in checking.

If there is a continual seepage through the walls, holes must be bored in the walls and tubes or small gas pipes inserted to concentrate the flow of water and relieve the pressure while the plaster coat is being applied. Caulk around pipes with oakum. Drainage pipes should remain open until the waterproofed coat has thoroughly set and is capable of resisting the pressure by its own adhesive strength, after which remove pipes and plug holes with cork or wood and cover with waterproofed cement plaster.

If the water pressure is exceedingly great, it will be necessary to sink sumps on the exterior of the walls to a depth below the basement floor level, and keep pumps going continually until the plaster has thoroughly set.

The finished surface must be protected from too rapid drying out, by keeping moist for at least a week to allow it to thoroughly harden and to prevent hair-cracks.

The Consulting Engineer

The ultimate effect of the work of the consulting engineer is to raise the standard of civilization. That applies to all branches of his work, whether he designs the structural parts of a big building, a drainage system, a sewerage system, a system for the distribution of water or any of the manifold fields in which the engineer finds an opportunity to apply his professional training. Because of the work of the consulting engineer the waste places of the world burst into luxurious blossom; because of his work the remote settlements of the country are brought into close contact by the medium of railroads and highways, with the centers of industry, and the horizon of the population is immeasurably widened. The consulting engineer is the man who makes it possible for a community to lead a wider life, with increased opportunities.—Exchange.

Fort MacArthur Contracts

The War Department has made a revision in the award of the contract for the construction of new buildings at Fort MacArthur, San Pedro. The contract for the erection of buildings to cost $192,200 has been awarded to J. F. Atkinson, and a contract for buildings to cost $54,654 has been let to John B. Dawson. The larger buildings will be of hollow tile construction with plastered exteriors and clay tile roofs. Some of the smaller buildings will be of frame construction.

Passing of Scott McKay, C. E.

The death of Mr. Scott McKay, 49, surveyor for sixteen years of Fresno county, occurred Saturday, May 4, of pneumonia. Mr. McKay was well known by the engineering profession throughout California. He was a graduate of the technical department of the Valparaiso University of Indiana, and spent his boyhood days in the town of Viavi in that State.

In an official capacity he was associated for eight years as the deputy of Former County Surveyor George L. Hoxie of Fresno. Mr. McKay was elected to the office in 1902 and continued in it up to the time of his death as the result of successive elections.

The greatest piece of engineering and construction work to his credit is perhaps the Sand Creek mountain road, carried on a 6 per cent grade, and built under his personal supervision by the Reed Brothers of Reedley. His last finished work was the reduction of the grades on the Squaw Valley foothill road in overcoming by a 6 per cent grade the Squaw Valley, Boren and Irwin hills, making it one of the finest foothill scenic roads in Fresno county.

Ten-Story Hotel

Reliable information has been given this magazine that Mrs. W. F. Morris of Menlo Park, who has ranked for many years as a successful woman hotel manager, has arranged for the construction of a $500,000 ten-story class A hotel and apartment house on Post street, San Francisco, from plans to be prepared by Mr. Kenneth McDonald, Jr. Mr. McDonald recently spent some time in the East attending to business said to be connected with this proposed improvement.

Mrs. Morris recently sold her interest in the Hotel Cecil on Post street, and is the present lessee of the Hotel Casa del Rey at Santa Cruz.

There will be approximately 250 rooms, and the fact that a number of reservations have already been made is considered good evidence by Mrs. Morris and her associates that the project will go ahead.

Good Advice

In times of war prepare for peace. Overhaul your plant, Mr. Architect, in dull times; just as manufacturers and merchants do. Perfect your organization, devise systems for your work; draw up statistics and compile data; cut out the dead wood—make ready!—The Architectural Forum.

Residence Alterations

A number of alterations are being made to the residence of Mr. H. S. Scott, mayor of Ross, Marin county, from plans by Mr. W. Garden Mitchell.

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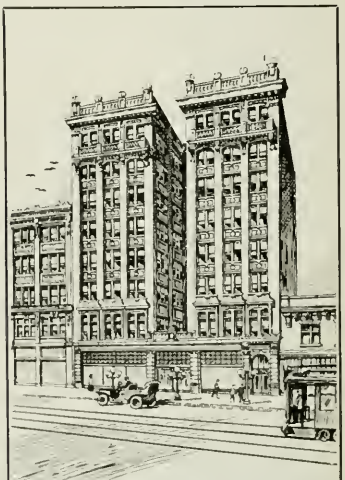
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County of San Francisco, }

Before me, a Notary Public in and for the State and County aforesaid, personally appeared A. I. Whitney, who, having been duly sworn according to law, deposes and says that she is the sole owner of The Architect and Engineer of California, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

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627 Foxcroft Bldg., San Francisco
Editor.....FREDERICK W. JONES
627 Foxcroft Bldg., San Francisco
Managing Editor .....None
Business Manager.....A. I. WHITNEY
627 Foxcroft Bldg., San Francisco

2. That the owner is A. I. WHITNEY, Sole Owner, 627 Foxcroft Bldg., San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by her.

A. I. WHITNEY,
Publisher and Owner.

Sworn to and subscribed before me this 2nd day of October, 1917. SID S. PALMER,
Notary Public in and for the City and County
[SEAL] of San Francisco, State of California.
(My commission expires Dec. 31st, 1918.)

Gas Flood Lighting

Mr. C. B. Babcock's article on "Gas Flood Lighting," printed in the March issue of The Architect and Engineer, was read with much interest. A slight error in one of the captions might convey a wrong impression, however, hence the following explanation: The caption read: "Concrete Electric Flood Lighting Post," when it should have read a "Concrete Gas Flood Lighting Post."

Tourist Hotel

According to the Oakland newspapers, capitalists from Southern California have taken options on a site for a tourist hotel and golf links in Alameda county. It is proposed to spend $1,000,000 after the war in the construction of a hotel, golf links and other attractions.

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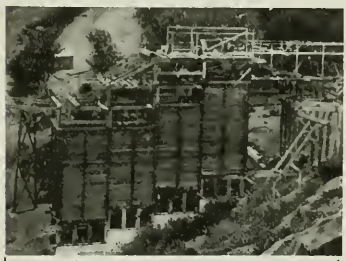

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A. I. A. National Convention

IT is no longer deemed unprofessional for an architect to advertise. At the recent convention of the American Institute of Architects held in Philadelphia a resolution was adopted striking from the canons of ethics Article 4, which was to the effect that "it is unprofessional to advertise." The convention also authorized a rewording of the circular of advice to bring it into harmony with the canons as they now stand and to show the difference between the good and the bad in advertising. The subject was probed very thoroughly and in its conclusions the committee says:

"To the makers of this report it would seem possible to support the plea for the repeal of Institute Canon No. 4:

"By the injustice that has so far characterized its enforcement, or rather lack of enforcement. An unenforceable law is a bad law. Better no law than one that reaches only a part of the offenders and at that not the worst part.

"By the tendency it has to suppress and restrict legitimate and desirable publicity. Better no rules than those that cost too much.

"By its unfortunate limiting effect on Institute membership.

"By its prejudicial effect in the eyes of the press. We as a profession need the partnership of the press and should have it even if we must make some concessions to gain it.

"By the public's—not altogether unreasonable—claim that it sustains a loss in our failure to add our bit to general education through the medium of advertising.

"By the fact that men of education stand openly on both sides of the question.

"Perhaps not the least impelling of the motives that prompt the suggestions in this report is dread of what seems to be the one possible alternative. We can not advise embarking on any effort to legislate in the matter of anything so capricious as taste—with the cumbrous machinery that would be imperative—we have committees enough without having to create one on ethics. Is there any valid reason why, in this age of democratic endeavor, the American Institute of Architects should cling to this or any other relic of that time when the professional idea owed its existence to the mental entanglements with which it was surrounded? Is it not time that we consider carefully not only the loss of the canon on advertising but of how many more of the old worn-out rules, undemocratic distinctions, and un-American assumptions we can get rid of? Why not the honor plan in place of these cramping restrictions? It has been found to work where the moral tone is even lower than it is supposed to be among architects. Moreover, it would seem that the less we owe apparent cleanliness to fear of punishment, the less would we in truth deserve the punishment. In our recommendation to abolish the ban against advertising, we see nothing but gain in the possible consequences."

The following officers were elected:

President, Thomas R. Kimball, Omaha, Neb.; first vice president, Charles A. Favrot, New Orleans, La.; second vice president, George S. Mills, Toledo, Ohio; secretary, Wm. Stanley Parker, Boston, Mass.; treasurer, D. Everett Waid, New York City. Directors to serve for three years: Edward W. Donn, Jr., Washington, D. C.; Robert D. Kohn, New York City; Richard Schmidt, Chicago, Ill. Directors to serve for one year: Ellis F. Lawrence, Portland, Ore.; Fellows Elected: James E. Allison, Los Angeles, Calif.; Louis Ayres, New York City; Charles Butler, New York City; E. F. Dougherty, Atlanta, Ga.; A. C. Eschweiler, Milwaukee, Wis.; Albert Kahn, Detroit, Mich.; John P. B. Sinkler, Philadelphia, Pa.; William L. Steele, Sioux City, Iowa.

Real Estate Men Address Los Angeles Architects

MESSRS. W. Ross Campbell and Richard C. Willis, as a committee representing the business property dealers of the Realty Board, addressed the May meeting of Southern California Chapter of the American Institute of Architects held in the Hollenbeck Cafe. In the absence of the president and vice-president, Mr. Albert C. Martin, former president of the Chapter, presided at the meeting.

Mr. H. F. Withey reported that a meeting had been held by a committee of architects with a committee from the Realty Board to consider the matter of dividing commissions between real estate dealers and architects. Messrs. Campbell and Willis addressed the members on this subject and pointed out that neither a leasing broker nor architect could render full measure of service to a client unless he received a proper remuneration and suggested that the two professions work together to assist each other in obtaining the proper fees and that any violation of this principle or any instances of splitting commissions should be reported to the respective organizations and the members properly dealt with. The leasing brokers propose to employ the service of an architect where necessary, and in return ask that the architects do not endeavor to obtain tenants for proposed builders but secure the services of a leasing broker, who from his constant dealing with tenants, is expert in their needs, the requirements for the proposed buildings, and in seeing that leases are properly drawn.

Mr. Withey reported that Mr. J. E. Allison had been elected to Fellowship in the Institute at the convention held at Philadelphia during the latter part of April. Mr. Walker reported that the committee of the Chapter and Engineers and Architects Association had completed a draft of proposed building ordinances for San Jacinto and Hemet to require earthquake resisting construction in these two cities. Mr. Albert C. Martin, chairman of the Liberty Loan Committee, reported that the architects had subscribed for about $30,000 of bonds.

Believes in Durability of Concrete Ship

Mr. F. J. Wig, head of the Department of Concrete Ship Construction, United States Government, who attended the launching of the concrete boat "Faith" at Redwood City, states in his official report that the reinforced concrete ship, in his estimation, can be built structurally equal to any steel ship.

"My information," he says, "assures me with all the certainty possible short of actual experience that a concrete ship will be durable for several years or throughout the probable duration of the present war. There are deteriorating elements which may limit the life of a concrete ship to three or four years, but this can be determined only from experience. Our present emergency calls for ships, and their life is not of great importance just now.

"The construction of concrete hulls should not interfere with the present programme for the construction of wood and steel hulls in so far as labor and materials are concerned. It is not true that the reinforced concrete hull can be built more rapidly than steel hulls in a well organized yard, but concrete offers this advantage, that a concrete hull can be built in a very simple plant, calling only for concrete mixers, hoists and other equipment readily obtainable in any large city, while steel ships must have an elaborate plant, erected at high cost and requiring considerable time for installation. The steel ship plant also requires high skilled labor, while common labor answers the purpose in construction of concrete ships except for the foreman and superintendent. Thus the labor problems, as well as the equipment and material problems, are simplified."

Building Material Announcement

The selection of the Pacific Building Materials Co., San Francisco, by the manufacturers to handle Kinnear steel rolling doors and Medusa white cement in this territory, made it advisable to give up minor agencies and the retail store and concentrate on the larger lines.

Mr. C. J. Waterhouse has severed entirely all connection with the Pacific Building Materials Co., and under the firm name of Waterhouse & Wilcox, Inc., will operate the retail store at 523 Market street. With this exception the personnel and organization of the Pacific Building Materials Co. remains intact.

The Pacific Building Materials Co. has rented a large fireproof building on a spur track near Fourth and Brannan streets, San Francisco, for warehouse purposes. The new offices of the company are at 525 Market street (Underwood building).

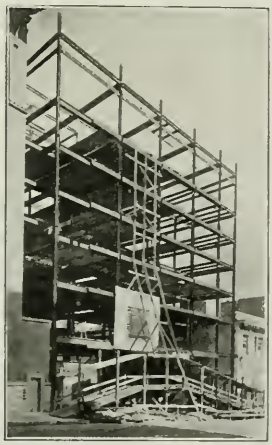
The principal lines handled are Medusa white cement, Kinnear steel rolling doors, Dayton concrete insert, Samuel Cabot quilt and shingle stains, general fireproofing laths, Feralun and Triangle mesh fabric.

More Hospitals

Advices received from Washington are to the effect that the government will spend $500,000 or more immediately in building additional hospital accommodations at the Presidio of San Francisco. About six buildings will be erected, part of which will be of a permanent character.

Workingmen's Cottages

Mr. Wm. Pierce will build a one-story frame workingmen's hotel, power plant and cottages on the Willota ranch, near Suisun, from plans by Mr. Henry C. Smith, San Francisco.



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Volume LIII Number 3.

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Published monthly at 626-627 Foxcroft Building, San Francisco, in the interest of
ARCHITECTS, STRUCTURAL ENGINEERS, CONTRACTORS AND THE ALLIED TRADES OF THE PACIFIC COAST

Yearly Subscription, $1.50
Single Copy, 25 cents

Entered at San Francisco Post Office as Second Class Matter

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THE
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OF CALIFORNIA

JUNE, 1918 Vol. LIII. Number 3

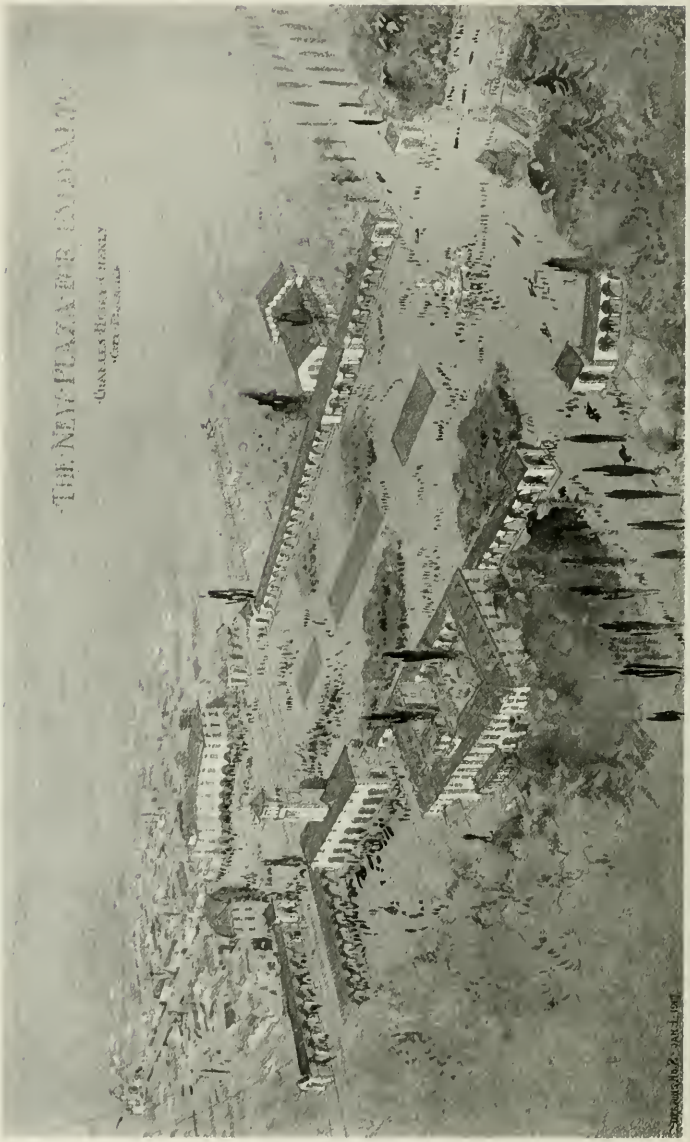
The Work of Charles Henry Cheney, Architect and City Planner

By HENRY F. WITHEY, A. I. A.

IN reviewing the subject of City Planning as relating to the State of California, it is to be noted that real progress dates from about five years ago, when the State Conference on City Planning was organized. Among the leading spirits of the Conference was Mr. Charles Henry Cheney, architect of San Francisco, and he has since been largely responsible for the success and rapidity with which the City Planning movement has advanced.

In any work of social or economic reform there must always be a leader, and in this instance Mr. Cheney has shown undaunted courage, perseverance and enthusiasm, proving himself fully equal to the demands of the position. The fact that California is now in an advanced position to carry on city planning is due largely to the foresight and untiring energy with which he and his confreres have labored to make city authorities understand the importance not only of making plans, but of carrying them out. These men wisely avoided the pitfalls of earlier advocates of the movement, profitted by their experiences, and pursued the judicious policy of first making research into the fundamental elements controlling civic growth, in this way laying a careful foundation for all future work. They may now look back with no little satisfaction, on milestones of accomplishment that portend greater city planning work for the years to come.

In the past decade city lay-outs of elaborate scale had been voluntarily made by civic bodies in many parts of the United States, only to be pigeonholed for the lack of official origin, or of any permanent city planning body vested with the authority to carry them out. Almost without exception these plans called for elaborate improvements, monumental in character. The "City Beautiful" was preached, which was theoretically an excellent idea, but failed to offer a practical solution, since it was attacking the issue at the wrong end. This earlier phase of City Planning, although a failure in some respects, was never-



STUDY OF THE NEW PLAZA
SINCE ADOPTED IN PALO ALTO
CHAS. H. CHENEY, CITY PLANNER

Typical wasteful wide pavement on a residence street. Half the roadway would be ample—keeping the street the same width and widening the sidewalks—and the property would be worth more.

Modern residence street with 20 ft. roadway sufficient for all local traffic and not inviting speeders. The main wide traffic road passes at the far end. Note same distance between houses as in adjoining picture.

CITY PLANNING SAVES WASTE

theless of remarkable educative value. It is now more or less generally recognized that the first essential is the passage of City Planning laws, under the operation of which the "City Beautiful" of the future is assured. This is important not merely because of the esthetic principles attained, but because it results in working out, in an orderly and consistent manner, the problems of transportation, housing, limitation of the heights and uses of buildings, playgrounds, parks, schools, civic centers, etc.

With all this in mind Mr. Cheney has invariably exerted his efforts toward attempting to provide the proper machinery before proceeding with any of the actual planning. His education fitted him remarkably well for the task he assumed, being a graduate of the University of California, and having spent three years at the Ecole des Beaux Arts in Paris. Following this he travelled extensively through France, Italy, Spain and England, and later spent several years of practical experience in architecture in New York and San Francisco.

The present war has brought the pressure of attention to bear on one phase of City Planning, that of housing industrial workers, which we are now discovering is very essential. In the fall of 1914, as a consultant to the Commission of Immigration and Housing of California, Mr. Cheney was sent East to report on better types of housing for workers. He visited the principal industrial centers of the United States and Canada, bringing back photographs, plans and details of housing progress. These were mounted in an exhibit of "Better Housing" in contrast with bad conditions which the Commission had actually found to exist in various California cities. This contrast clearly demonstrated the futility and wastefulness caused by the lack of planning. The success of his work has proven that logic of this sort carries conviction with it, and is more efficacious in correcting the evils of the past than any amount of drawings, picturing the ideal.

In addition to his work as Consultant, Mr. Cheney has directed his attention to the study of social and economic conditions of the State, lecturing under the auspices of the Extension Division of the University of California, and the California Conference of City Planning. This work has been most effective.

Mr. Cheney has taken the stand that before any work should be undertaken, proper authority should be secured by the establishment of permanent City Planning Commissions, so that all studies, surveys, deductions and recommendations made would be official and come from a responsible arm of the City Government. Due to his initiative and untiring energy to make this under-

BIRDSEYE VIEW OF WEST SACRAMENTO TOWNSITE SCHEME

The flatness of the site made direct diagonal traffic arteries between important centers easily feasible. The business and industrial zones show dark in contrast with the residential districts.

L. P. Hobart and Chas. H. Cheney, Associate Architects, 1913

ANOTHER EARLY DRAWING OF THE WEST SACRAMENTO TOWNSITE

Taken from the opposite direction, to show its relation to the ten-acre farm tracts and to the city of Sacramento.

L. P. Hobart and Chas. H. Cheney, Associate Architects, 1913

stood, the League of California Municipalities took the matter up before the Legislature and secured the passage of two city planning measures that are of paramount importance,—the first is the City Planning Law of 1915, an Enabling Act providing for the creation of City Planning Commissions in all incorporated cities or towns of the State. It would have been better had the law been mandatory, as in Massachusetts, but our State constitution makes that impossible. However, time may prove that voluntary adoption of City Planning principles will bring quicker results than under a compulsory method. The law is general in outlining the duties and powers of such commissions, and provides amply for their maintenance.

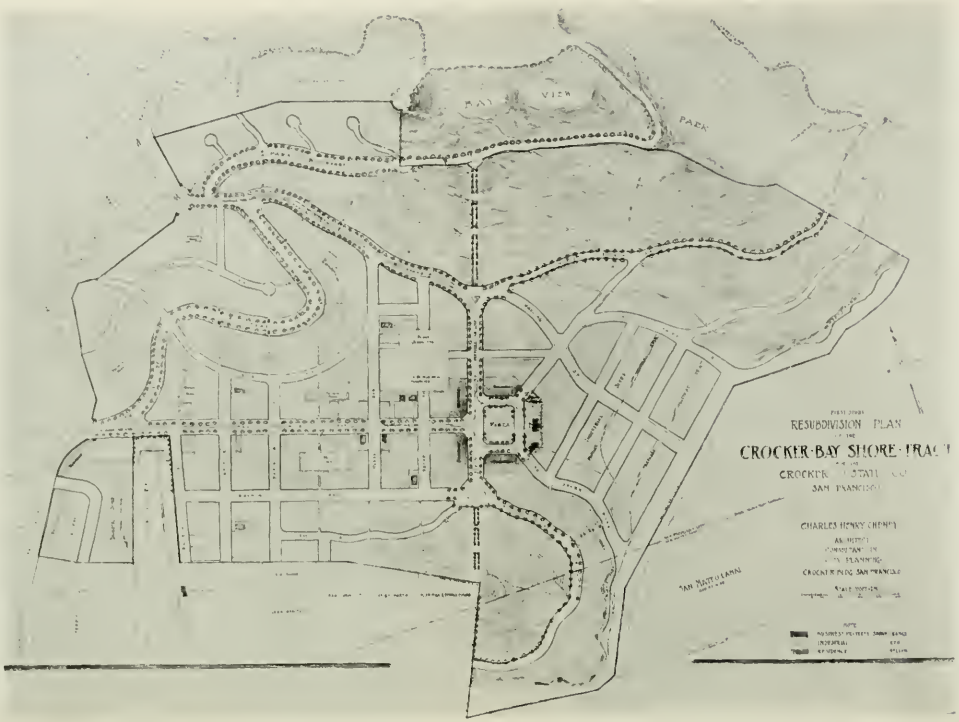
The second law, passed largely at the request of the City Attorneys of the State, is termed the State Zoning Act. This is a most valuable statute, designed to definitely protect and preserve the rights and privileges of property owners.

By this law a city may divide itself into sections or zones, and permit in each zone the construction of buildings of only such uses as may be advisable, with appropriate regulations and restrictions to be enforced therein, such as limitation of the height of buildings, ground area to be covered, etc. Under this act the property owners may at least have a chance to say what character of building they think will be to their best interests in their respective zones, with the opportunity to be heard before the city issues a permit for the erection of such a structure as might injure their neighborhood.

When one considers the many instances where residential property has depreciated in value because of the intrusion of an industrial building, or other use of objectionable nature, it is at once evident that the State has taken a long step in protection of the individual property owner. It must be remembered, though, that this is but an Enabling Act, and the advantages to be gained by it can only be obtained by the adoption of these provisions by local city ordinance.

Many of the larger cities of the State have already taken advantage of the opportunities offered to establish permanent City Planning Commissions, of which may be named San Francisco, Berkeley, Alameda, Fresno, Sacramento, Stockton, San Jose, Riverside, and a number of others,—twenty-three municipalities in all. As the Commissions in most of these cities have been established

SCHEME FOR A FREE PUBLIC MARKET FOR WEST SACRAMENTO
L. P. Hobart and Chas. H. Cheney, Associate Architects, 1913



STUDY OF RESUBDIVISION PLAN OF CROCKER BAY SHORE TRACT, SAN FRANCISCO
CHAS. H. CHENEY, CITY PLANNER

less than two years, their record of accomplishment is not as yet very tangible. In each city a comprehensive survey is the first essential—accurate data must be gathered as to existing conditions, which takes one or two years to complete, sometimes more.

In six of the above-named cities—Fresno, Berkeley, Alameda, Palo Alto, Turlock and San Rafael—Mr. Cheney has acted as consultant to the City Planning Commissions, and it is unquestionably due to his expert advice and assistance that where there has been a reasonable budget appropriation the work has gone ahead with measurable progress. Space will not permit of a resumé of the individual surveys and reports made for these cities, nor are they of particular interest at this time, other than as an exemplification of definite advancement. No great amount of reconstruction should be expected at once, but the physical results will begin to show in the not far distant future. As new buildings, bridges, parks, etc., are gradually projected, in conformity to a well-rounded, comprehensive plan, one may see the beginning of what will eventually prove the fulfillment of the ideal.

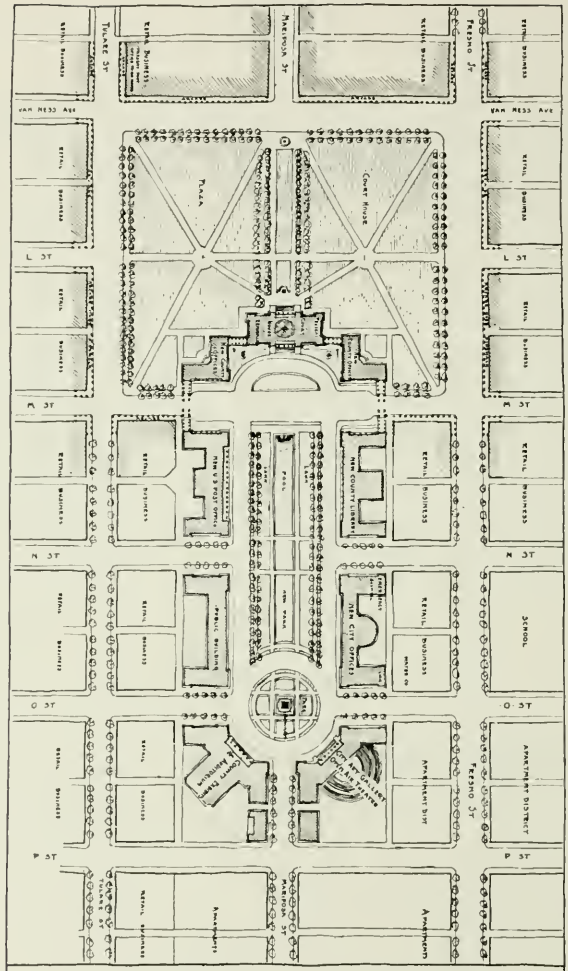
Not every architect, landscape architect or engineer can competently fill the position as city planning advisor—a special knowledge of municipal government, economics, sociology, living conditions and housing, as well as of the esthetic and practical principles of design, are absolutely essential. Moreover, if there is one virtue that a city planner must possess, above all others, it is patience, and second to that is tenacity of purpose. These qualifications Mr. Cheney possesses in a marked degree. Without them he could not have accomplished what he has—the consistent study of conditions of human life, writing, lecturing, forming and obtaining the passage of legislative measures that have given permanency to city planning, and finally, as a consultant, the solving of the innumerable problems that city life and activities bring about.

The citizens of California owe more to Charles Henry Cheney than they perhaps realize as yet.

City Planning Means

CONSERVATION of human energy and life;	**NOT** merely superficial beautification
ECONOMY, necessity, scientific reality;	**NOT** extravagance, dreams, fads.
A definite **PLAN** of orderly development into which each improvement will fit as it is needed;	**NOT** the immediate execution of the whole plan.
BUSINESS methods for city work;	**NOT** the surrender of the city to artists with vague schemes for civic adornment.
CORRELATION of the city's activities,	**NOT** wholesale alterations at great expense, with no assured financial returns.
Encouragement of **COMMERCE** and facilitation of business,	**NOT** the interruption of commerce and business
PRESERVATION of historic buildings with their associations;	**NOT** the destruction of the old landmarks and city individuality.
The development of an **AMERICAN** city,	**NOT** imitation of London, Vienna and Paris
Exercise of common **FORESIGHT** and prudence,	**NOT** ruinous expense and debt.
HAPPINESS, CONVENIENCE, HEALTH, for all citizens;	**NOT** merely expensive boulevards and parks available only to the rich

Arthur C. Comey.



PLAN OF FRESNO CIVIC CENTRE

AN AFTER THE WAR PROGRAM

100' to 1 INCH SCALE

AS ADOPTED BY THE COUNTY BOARD OF SUPERVISORS
THE CITY TRUSTEES & THE CITY PLANNING COMMISSION FEB 1918

CHAS H CHENEY – CITY PLANNER

PERSPECTIVE VIEW OF CIVIC CENTER SCHEME ADOPTED IN FRESNO
Chas. H. Cheney, City Planner

City Planning Progress in Fresno

By MILES O. HUMPHREYS, President Fresno City Planning Commission.

WHEN 50,000 people live and work together in one community, it would seem natural that there should be a commission or branch of the city government whose duty it is to initiate plans and make recommendations that will increase the health, comfort, convenience and joy of living for all of us. Yet, until two years ago, Fresno had no City Planning Commission and had rapidly grown up in a haphazard way, with more or less the usual checkerboard or squared off plan of streets and the troubles that come from lack of forethought. With a population of 12,500 in 1900 and 25,000 in 1910, we have now more than doubled again before another decade is out and our municipal problems have considerably increased.

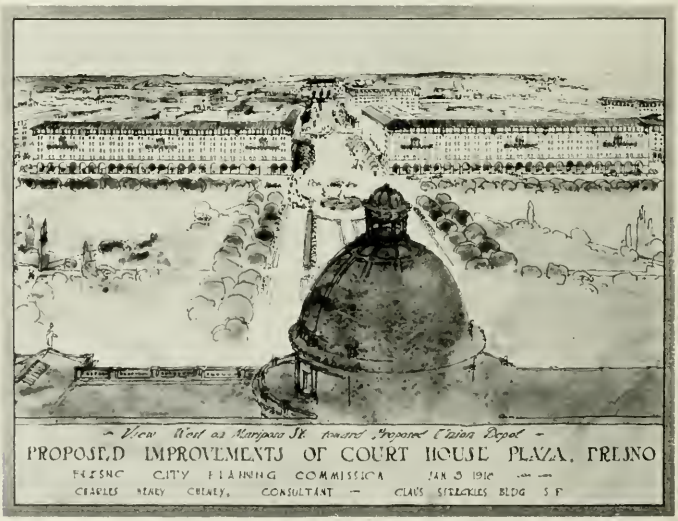
At the center of the rich San Joaquin Valley and the raisin and fruit industry, another doubling of population is certain within ten years, if not sooner. If the proposed Pine Flat reservoir be established, which will give twice the amount of available water for irrigation and farming purposes in the surrounding country of which Fresno city is the center, we do not see how Fresno can help becoming a municipality of 250,000 people within twenty years. The need for careful planning and forethought was therefore realized, we hope, in time.

Established in July, 1916, under the State City Planning Act, the Fresno City Planning Commission early adopted the policy that it would endeavor to plan for the future growth of the city so that the next 50,000 people who come here must do so to our benefit, as well as to their own. We want them to come and work and live among us and we know that we can make it profitable and attractive for them to do so, but we also want to safeguard those of us who have built the city as it is, to stabilize our property values, protect our business and home neighborhoods and make a safe and convenient place for industry.

Fresno, like most other cities, had had little idea of where it was going or how to make city improvements produce the greatest effect with the most economy and satisfaction to our citizens. In studying the situation it was soon found that to develop sensible and practical plans for city growth was no amateur matter. Fortunately the commission was provided with a first annual appropriation of $2,500, and with this it was decided to commence a careful and thorough study—first, of existing conditions and factors which determine

A SPLENDID EUROPEAN PLAZA

Facing which property owners built their buildings with an arcade over the sidewalk in return for certain privileges. Fifty to sixty-foot lots seem to have been the rule, and each owner built to generally conform to a design established by the municipal authorities.


View West on Mariposa St. toward Proposed Union Depot
PROPOSED IMPROVEMENTS OF COURT HOUSE PLAZA, FRESNO
FRESNO CITY PLANNING COMMISSION JAN 3 1916
CHARLES MANLY CHENEY, CONSULTANT — CLAUS SPRECKELS BLDG S F

PERSPECTIVE OF COURT HOUSE PLAZA IN FRESNO

As it would look if property owners were allowed to build 15 feet out over the sidewalk for the five upper stories of their buildings, provided they leave an open arcade on the ground floor and conform the exterior front of the building to a design established by the city. Present buildings, with one exception, are all old and must soon be replaced because the land has risen to $800 and $1000 per front foot.

the way a city grows, lives and works, and, secondly, what practical steps should be taken to bring about more orderly, effective, satisfying growth and improvement.

The commission, in undertaking its work, secured the services of Chas. H. Cheney, City Planning Expert of San Francisco, as its consultant and in him found a man of sound ideas and wide observation, and to his capable direction is due much of the progress of its work to date.

As few recommendations as possible were made to the City Council during the first year's work of the commission. Time for research and analysis of existing conditions were necessary. Accordingly the following surveys were gone into:

A survey of the railroads and transportation into and through the city with conferences with the division superintendents and engineers and the State Railroad Commission, as to existing routes, freight yards, depots and grade crossings and as to where future classification and freight yards would be needed, the possibilities of a union passenger station and a union freight depot.

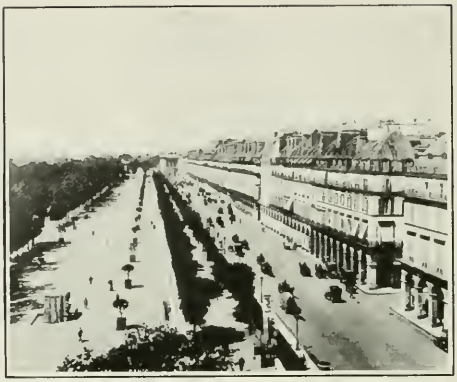
A brief industrial survey showing why industries come to Fresno, their needs as to spur tracks, water, extra large sewers, heavy hauling pavements, fire protection, public utilities, etc.

Survey of the use and height of existing buildings, housing and living conditions, building regulations, range of land values, with maps and diagrams showing present tendencies of growth.

Survey of traffic arteries, hauling streets and minor residential streets, existing pavements and needed paving program.

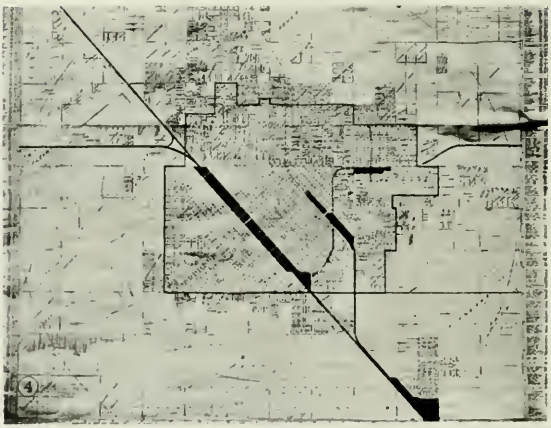
Survey of the possibility of the grouping of public buildings in one or more common civic centers in locations that would not block the path of business development.

SUGGESTED TYPE OF GENERAL DESIGN TO BE ADOPTED BY THE CITY
To which all owners building out over the sidewalk would have to conform in Fresno.
Chas H. Cheney, Architect and City Planner



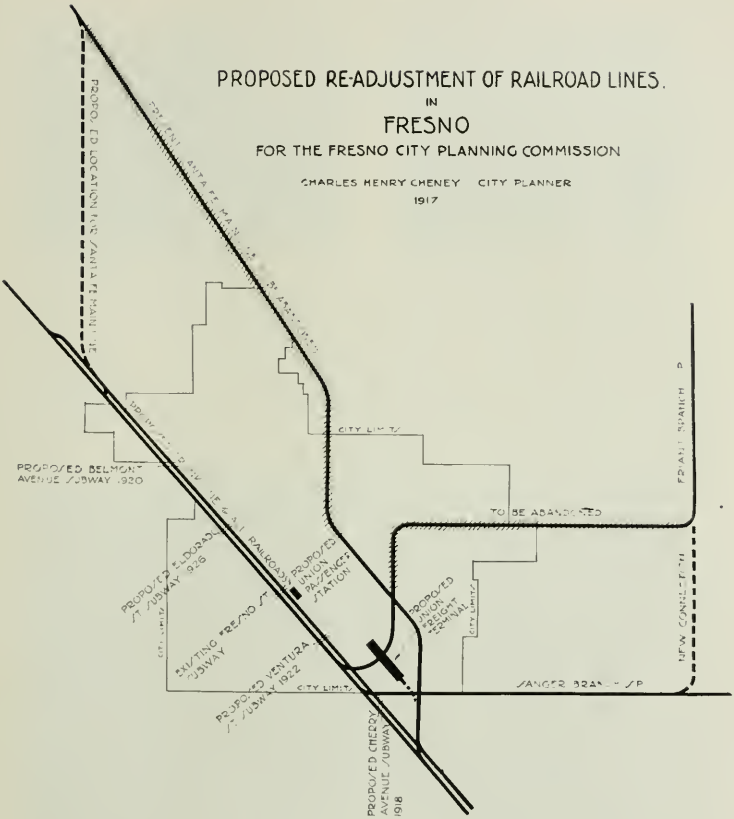
UNIFORM ARCADES OVER THE SIDEWALK ON THE RUE DE RIVOLI, PARIS

We can obtain similar arcades in California cities if we will make it worth while to the property owners on such streets to conform. Few such long arcades and uniform buildings were built all at once. It is evident that if the city allows one owner to build out over the sidewalk, others will follow suit, particularly where the existing improvements are old.



THE RAILROAD-OWNED PROPERTY IN FRESNO
Showing how the city is surrounded, with scarcely any outlets.

Chas. H. Cheney, City Planner



The Fresno City Planning Commission adopted in 1917 this plan of readjustments that would be advantageous to the city, before the Government took the railroads over. It is maintained that one path for all railroads is all that should be allowed to cut across the city and that this would insure a union passenger depot. Fresno is planning to take the matter before the State Railroad Commission as soon as the Los Angeles union depot case, now pending before the commission, is decided. When made it was supposed that it might take twenty-five years to secure these improvements, but Government operation now makes them almost immediately possible.

Survey of existing park, playground and recreation facilities and possibilities of future development and acquisition, together with possible future connecting boulevards and parkways. Also a tree census, showing existing trees, their kind, age and development.

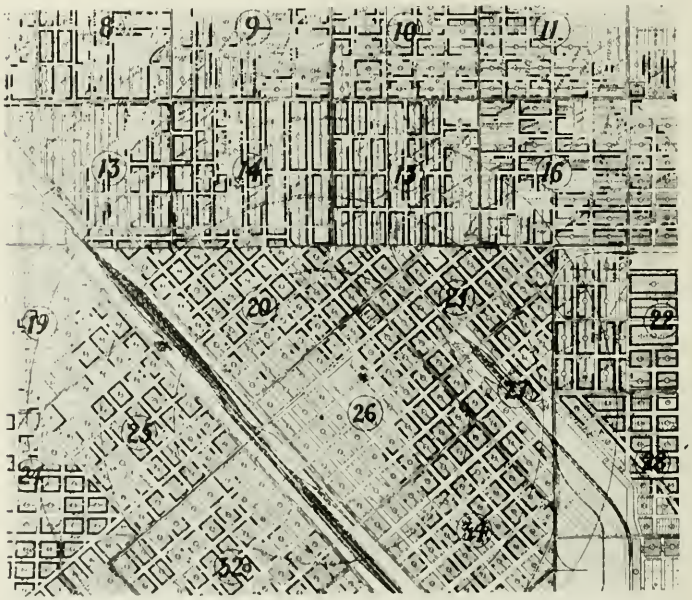
Within a few months the commission began to accumulate data that it could stand on in drawing deductions as to what would be for the greatest benefit of the city in the future. While nearly all of this information had previously existed in one form or another, it had never been gathered together in a shape to be most useful to city officials. From this data we began to have some ele-

A macaroni factory, built out to the street, in a good residence neighborhood in Fresno. This would have been impossible if the city had had a proper zone ordinance.

Type of good small homes now unprotected in Fresno, which the new zone ordinance would safeguard by keeping business and industry out of residence neighborhoods.

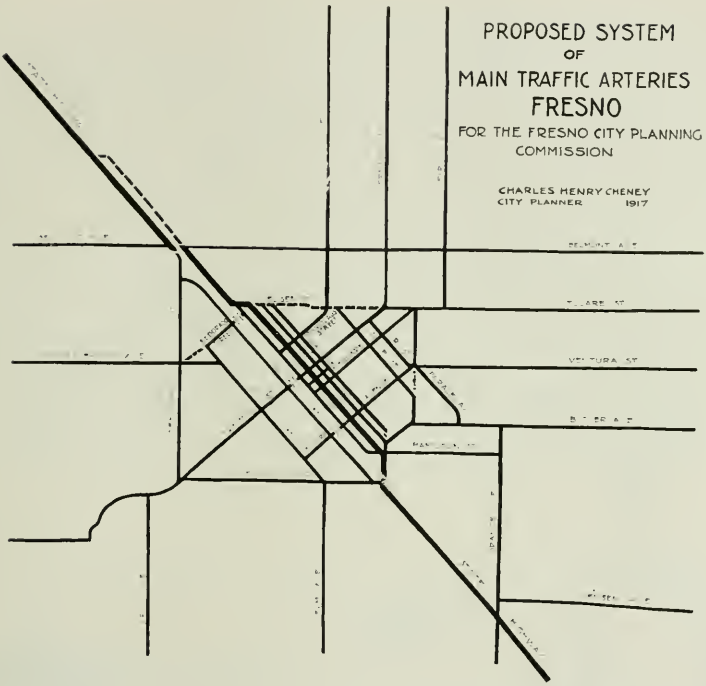
mentary understanding of what people wanted and needed and some idea of why they were not getting it.

This was not due, we found, to any particular negligence or lack of proper action by former city officials, and as such cannot be taken as a criticism of them. On the contrary, we dug up many splendid constructive suggestions



PORTION OF TREE CENSUS MAP OF FRESNO

Frontage with existing trees is shown outlined in black. A field notebook for each numbered district records exact location, age, size and kind of existing tree. From this data tree planting plans will be developed to fill out the gaps with a uniform type of tree, retaining existing trees as far as practicable.



The coming of the automobile has made a new problem of fast traffic, heavy pavements and safety to pedestrians. To meet it cities are establishing a system of main traffic arteries with wide heavy pavements and making narrow roadways, uninviting to the speeder, in minor residential streets, so that children will be safe and homes free from the dust and noise of the traffic street.

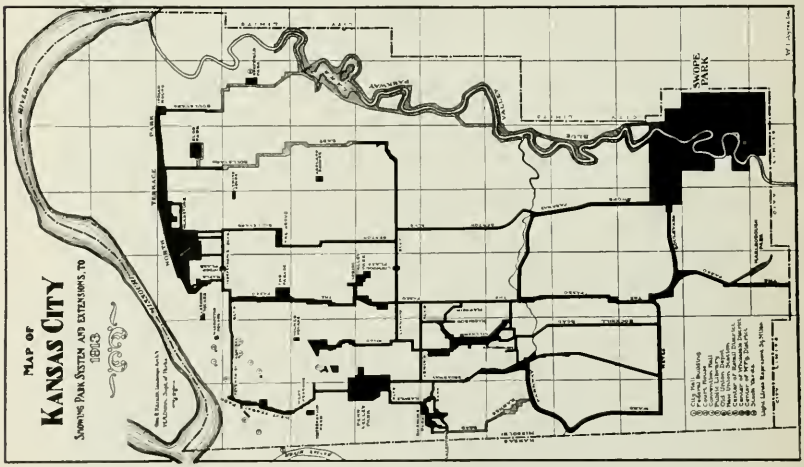
made by former city officials but which had come to naught because the improvements or changes recommended did not fit into any permanent, definite plan or policy for the development of the city and were lost. We also found many legal obstacles which had to be worked out.

No matter what proposal for the improvement of the city or deductions were made by the City Planning Commission, all efforts to get a firm foundation for city improvement to start with seemed to depend on where the city's business, residential and industrial districts were to be.

Accordingly, the zone ordinances of Los Angeles, Berkeley, New York City and many other places were studied and a proposed form of zone ordinance drawn up, together with suggested boundaries of such districts. The use of Existing Property Map showed us, as had been found in other cities, that Fresno had become divided into more or less clearly defined districts of different occupancy, use and type of building construction. There was the central, business and retail store district, with its fringe of garages, fuel yards, etc.

PARK SYSTEM OF SEATTLE, WASHINGTON

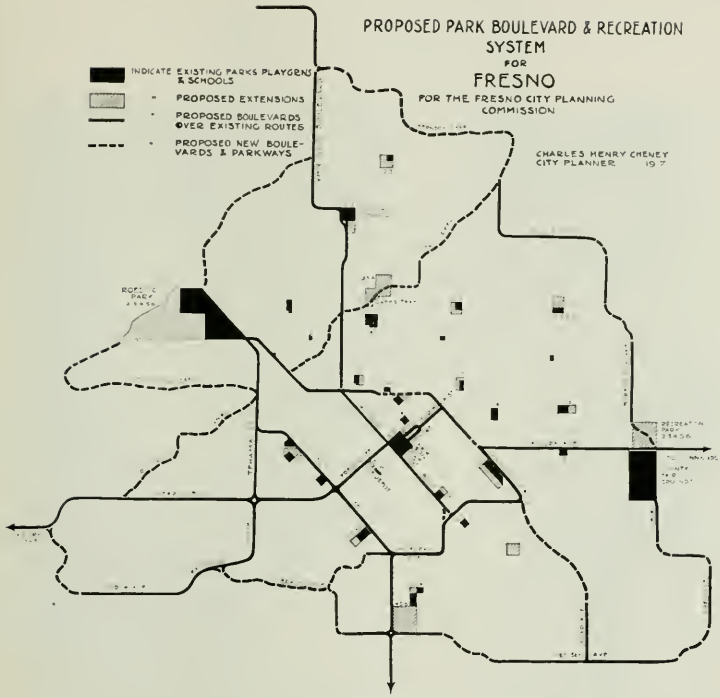
One Pacific Coast city that is well on the road toward completing a unified continuous boulevard and park system.



PARK SYSTEM OF KANSAS CITY

Geo. E. Kessler, Landscape Architect

Probably the most complete and finest single system of parks and boulevards in America. Over 2,000 acres of park lands and sixty-five miles of boulevards have been acquired, planted and maintained on the district assessment plan since 1895. The California parking district Act (Chapter 314, Statutes of 1913) makes possible a similar procedure here, which Berkeley and one or two other cities are already using.



Fresno has in Kearney Boulevard one of the finest planted avenues in the world. Roeding Park also makes a good showing. The adoption of a Park, Boulevard and Recreation System plan to work toward is essential to prevent duplication of playgrounds, stimulate gifts and to be sure all the city is served with parks. Fresno, like San Francisco, finds that all its parks at present are on the side of the city where the wealthy people live.

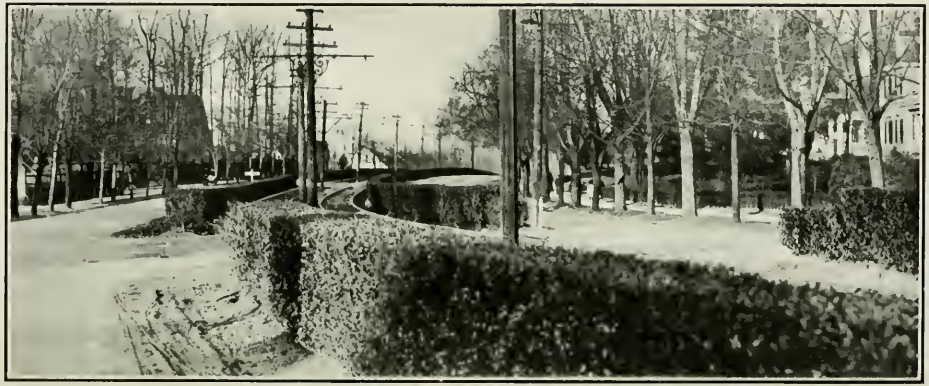
The warehouse and industrial district and fruit packing plants along the railroads to the south; the apartment and hotel districts in the center of the so-called "Old City," and then the great general encircling district of almost exclusively single-family dwellings.

It was evident that strong social and economic forces worked towards a natural segregation of buildings, according to type and use, and that in general the greatest land values and rentals were obtained where this segregation and uniformity were most complete.

But in spite of the natural trend toward this segregation, building development in Fresno had so far, in many parts of the city, been very haphazard. The natural trend had not been strong enough to prevent invasion of a residence district by harmful and inappropriate buildings, such as planing mills, lumber yards, laundries, macaroni factories and unnecessary, scattered small stores. Once a district was so invaded, rents and property values seemed to decline,

PROPER PLANTING STARTED — From the Hegeman Report

Modern traffic street, Brentmoor, St. Louis. Trolley-car tracks on special reservation between two roadways. In this picture are shown the beginnings of planting to screen the tracks and make the street resemble the one shown in the next picture.



PROPER PLANTING ACHIEVED — From the Hegeman Report

Modern traffic streets in winter. This scene is in Roland Park, a suburban residential development of Baltimore. It shows the result of planting that effectively screens the tracks of the street-car lines. Compare preceding picture.

ONE OF THE FINEST VISTAS IN AMERICA.

Looking up Mariposa street, Fresno, to the Court House. This also shows the traffic congestion on the narrow business streets at the center of the city.

and we believed that it would be difficult ever to reclaim this neighborhood to its more appropriate uses. We found individual property owners helpless to prevent these intrusions and the depreciation of their property. It was imperative that the municipality pass regulations that would do for these individual owners what they cannot now do for themselves—set up uniform restrictions that will protect each against his neighbor, and thus benefit everyone.

The general change in vehicular traffic to automobiles during the past ten years, we found, had caused many new and increasingly difficult traffic problems. We were told by the State Highway Commission that we could expect to see twice as many automobiles in use in the next four years, which may be somewhat minimized by the war; but our downtown business streets are already badly congested and overcrowded.

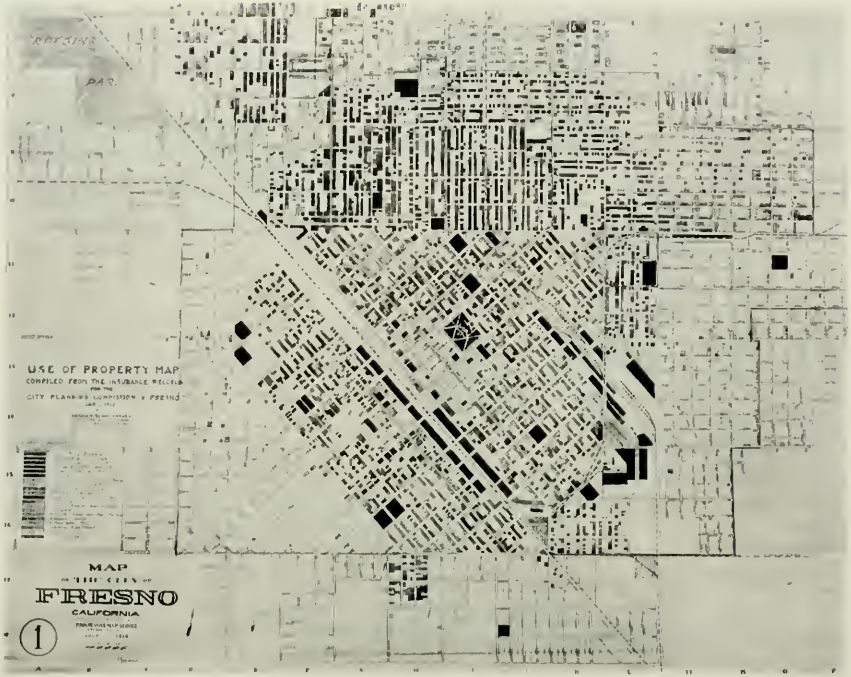
The only remedy seemed to be to set aside, as in other cities, about every fifth street as a traffic street, with extra wide and heavy pavements.

We found that in residence neighborhoods, families with children were no longer safe on a traffic street, and that the ordinary home owner preferred not to be on a traffic street on account of the dust and noise and danger of such a thoroughfare. To insure quiet, home-like residence districts, it would be necessary hereafter to lay down narrower paved roadways, which would not invite the speeder and which would save the needless waste of paving found on many of our present streets, and which would at the same time give wider parking spaces for the planting of much-needed shade.

It was estimated that approximately $1,000,000 of new paving will have to be put down on Fresno city streets in the ordinary course of events, during the next ten years. Common sense business methods require that the city would now make its program for such paving, well in advance, in order that through routes may be determined and developed as such and wasteful, over-wide pavements avoided wherever narrower roadways serve a better purpose.

However, it became evident that we could not decide on a sensible and practical street paving program until the city had established more or less definitely by a zone ordinance the districts for business, residence and industry.

A comprehensive zone ordinance and zoning plan was therefore put up for public discussion in the fall of last year and a great many public hearings and



USE OF PROPERTY MAP—Showing in different colors use of the 6,800 buildings in the city. This is legal evidence of the natural tendencies of growth and an important basis for zoning. Chas. H. Cheney, City Planner

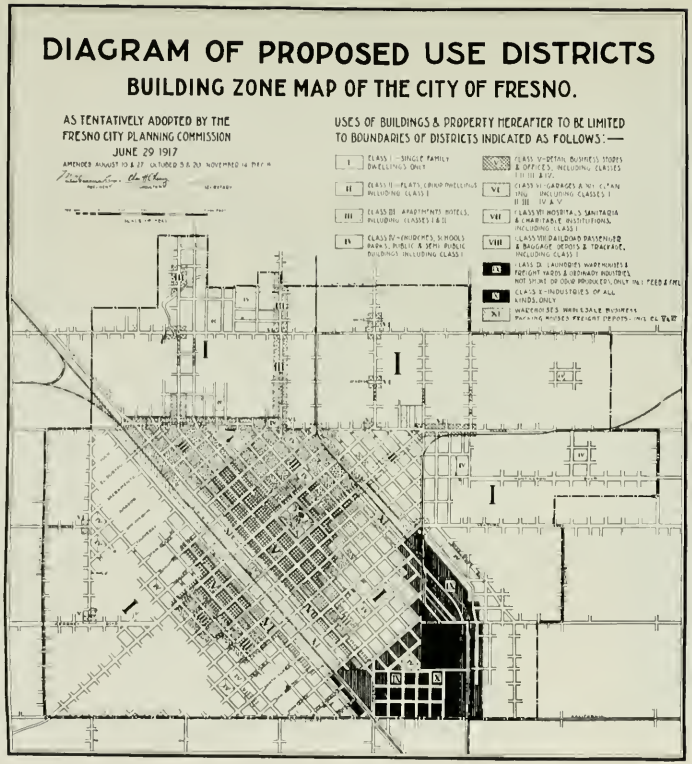
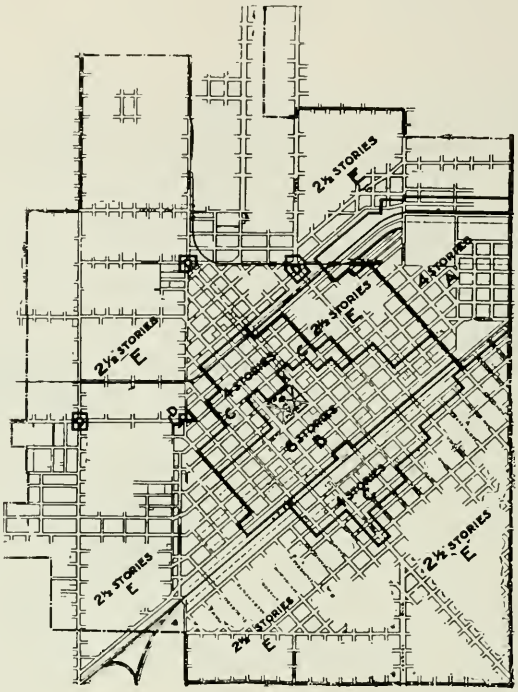


DIAGRAM OF PROPOSED USE DISTRICTS
BUILDING ZONE MAP OF THE CITY OF FRESNO.
AS TENTATIVELY ADOPTED BY THE
FRESNO CITY PLANNING COMMISSION
JUNE 29 1917
USES OF BUILDINGS & PROPERTY HEREAFTER TO BE LIMITED
TO BOUNDARIES OF DISTRICTS INDICATED AS FOLLOWS:—
I CLASS I - SINGLE FAMILY DWELLINGS ONLY
II CLASS II - FLATS, COMBO DWELLINGS INCLUDING CLASS I
III CLASS III APARTMENTS, HOTELS, INCLUDING CLASSES I & II
IV CLASS IV - CHURCHES, SCHOOLS PARKS, PUBLIC & SEMI-PUBLIC BUILDINGS INCLUDING CLASS I
V CLASS V - RETAIL BUSINESS STORES & OFFICES, INCLUDING CLASSES I II III & IV.
VI CLASS VI - GARAGES & NOT CLASS I INCLUDING CLASSES I II III IV & V
VII CLASS VII HOSPITALS, SANITARIA & CHARITABLE INSTITUTIONS, INCLUDING CLASS I
VIII CLASS VIII RAILROAD PASSENGER & BAGGAGE DEPOTS & TRACKAGE, INCLUDING CLASS I
IX CLASS IX LAUNDRIES, WAREHOUSES & FREIGHT YARDS & ORDINARY INDUSTRIES NOT STINK OR ODOR PRODUCERS, ONLY INCL FEED & FUEL
X CLASS X - INDUSTRIES OF ALL KINDS, ONLY
XI WAREHOUSES, WHOLESALE BUSINESS PACKING HOUSES FREIGHT DEPOTS INCL CL VIII
AMENDED AUGUST 10 & 17 - OCTOBER 5 & 20 NOVEMBER 14 1917

PROPOSED ZONING MAP OF FRESNO.

Showing progress of discussions of boundaries with committees of civic organizations up to December 8, 1917. Since that time there have been further amendments and the plan now is getting to a shape to meet all reasonable objections to it.



HEIGHT LIMITS AS AT FIRST PROPOSED FOR FRESNO
Chas. H. Cheney, City Planner

They have since been modified to properly cover the readjustments in use districts and should serve to stabilize property values and to prevent over-congestion.

Sanitarium built in one of the finest residence streets of Fresno, over protest of residents, because there was no zone ordinance.

Part of Fresno's industrial district, with spur track in sidewalk. No new dwellings should be allowed in such districts.

conferences with civic committees held by the commission. While these hearings brought out most valuable and important readjustments in the plan, there were bound to be misunderstandings of its development. A number of prominent civic organizations and committees most heartily endorsed the ordinance and urged its passage very strongly. While one committee of real estate men concurred in the plan with slight modifications, another committee busied themselves in trying to stop all zoning.

The City Planning Commission has been in no hurry to make its final report to the City Council, but as the months go on, with the various committees and business men looking thoroughly into the plan, it becomes evident that the principle of segregation of uses is being accepted as the only means to eliminate cross-purpose development and induce harmonious growth. If the boundaries of business and other districts are made too large for the closest interest of the whole city, it will yet be a most valuable step in advance to have zoning adopted. During the past six months the city has had a number of practical illustrations of the urgent necessity of a comprehensive zone ordinance, and the City Trustees have had to resort to the passage of fragmentary zone ordinances in order to keep lumber yards, fuel yards, planing mills, etc., out of our residence districts and principal business streets. Also, it seems as though a number of new industries are hesitating to settle in Fresno until a definite industrial zone is established by the city, where they know they may make their investment without fear of future attack as a nuisance or possible removal, as has happened in a number of cities.

While the zoning discussions are still going on, the commission has turned to other sides of its work and developed a most important and successful civic center plan. By co-operating closely with the County Board of Supervisors, a plan was worked out which both the county and the city have adopted for the grouping of all new public buildings in an effective manner. Behind the existing court house we can widen the streets into a new civic center plaza, at a point where these public buildings cannot block the path of business development and yet are convenient to the center of the city. The plan provides for considerable economy in that the present splendid court house structure and dome can be retained and modern office wings be added on an extensible plan of unit construction that will permit the county to build these needed structures out of a comparatively small annual special tax, without a bond issue and with a consequent saving of a very large interest account that always grows with such an issue.

The commission has also developed plans for the improvement of the architecture around the court house plaza and the arcading of these streets. We realize that Fresno has a most unusual opportunity here, but it will take a number of years to work this matter out.

A general park, playground, school and connecting boulevard scheme has also been brought to a point where we can make some conclusive recommendations. But in general the commission is still at a point where the final or more mature city plans are only beginning to evolve. During the coming year we hope to begin to put them permanently on paper, after we have completed a survey of the physical needs of the schools and playgrounds.

The conditions surrounding us today incident to the war emphasize the need for careful city planning as never before, with its consequent economies and advantages, and this is what the Fresno Planning Commission is seeking to extend to all departments of the city's growth and activity.

Park Progress in California—June, 1918

Compiled by Chas. H. Cheney for the California Conference on City Planning.

City and Population, 1918	Annual Park Expend. per 1000 pop.	Acres Parks Developed per 1000 pop.	Acres Parks Undeveloped per 1000 pop.	Total Acreage per 1000 pop.	Approp. on Tax Rate.
1. Pasadena, (45,000)	$2,632	4.13 ac.	17.77 ac.	21.90	.09
2. Redlands, (11,000)	1,136	3.54	1.63	5.18	..
3. San Diego, (90,000)	1,022	5.64	10.00	15.64	.10
4. San Francisco, (525,000)	720	...	...	2.55	.07
5. Alameda, (32,000)	556	.62	...	.62	.089
6. San Jose, (40,000)	495	1.58	14.66	16.24	..
7. Stockton, (45,000)	494	1.22	.49	.72	.04
8. Fresno, (55,000)	490	1.90	.30	2.20	..
Tacoma, (130,000)	...	1.92 ac.	6.64 ac.	8.56	.17
Portland (310,000)	1,107	...	...	4.99	..

FRANCES WILLARD INTERMEDIATE SCHOOL, TELEGRAPH AVENUE, BERKELEY
L. P. Hobart and Chas. H. Cheney, Associate Architects

City Planning Progress in Berkeley

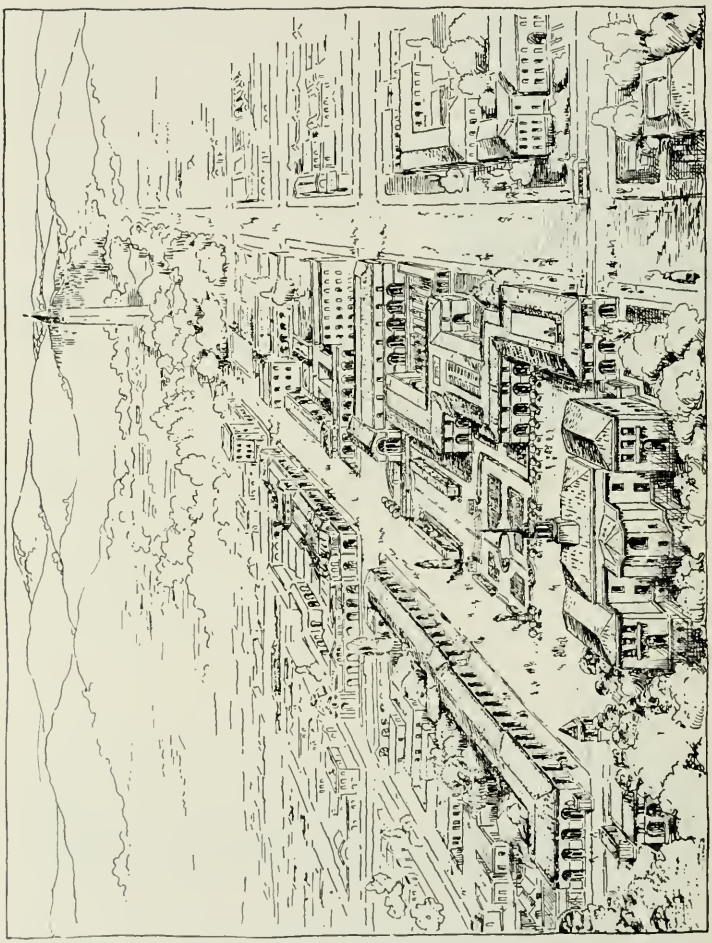
By FRANK D. STRINGHAM, Pres. City Planning and Civic Art Commission

IF the present rate of increase is maintained, the population of the city of Berkeley will double in the next fifteen or twenty years. This rapid growth, so characteristic of American cities, emphasizes the urgency of a present plan to direct future development, prevent congestion and insure healthful conditions of living. A reasonable city plan properly carried out also protects property and investment from useless injury, and contemplates the welfare of future generations. It should be the concern of urban populations to preserve sufficient light and air in all places where human beings work and live. This may be accomplished by districting or zoning laws, which divide any particular city into different zones or districts according to the different classes of use to which the buildings in such city may be put.

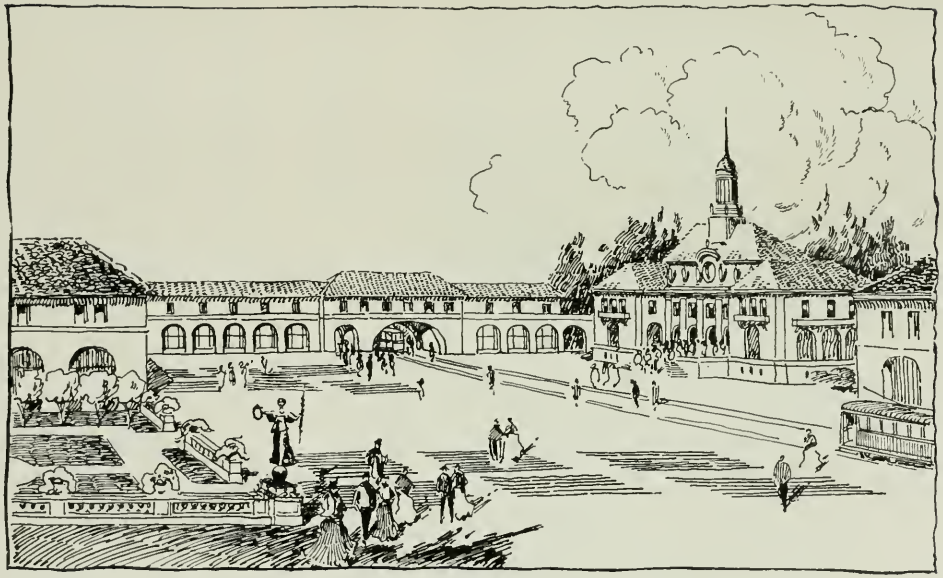
Berkeley is now working on that problem, and has been working on it for more than two years. It created a City Planning Commission in June, 1915, and Mr. Duncan McDuffie was appointed its first president in September, 1915. The commission at once commenced the preparation of a districting ordinance based on the Minneapolis plan. The distinctive feature of this plan is that action is not usually taken by the city legislative body until an initiative petition is filed by residents. After careful consideration an ordinance was finally adopted by the City Council of Berkeley in May, 1916, or two months before New York adopted its districting resolution. At this writing eleven petitions have been presented to the council on the initiative of residents who desired protection, and two more petitions are under way. Except in two cases, where considerable opposition developed, these petitions were favorably acted upon by the council, and the results give a feeling of security to those who reside within the district formed.

For the past two or three months the commission has been preparing and formulating a more comprehensive ordinance to be submitted to the people, based on the New York plan of dividing the entire city into compulsory major zones for residential, business and industrial purposes. The new ordinance proposes also to limit the height and bulk of buildings according to their location and the character of the districts in which they are situated. During all of this time the city has employed Mr. Charles H. Cheney as its city planning consultant, and he has from time to time prepared preliminary studies and comprehensive reports on the city plan, including the subjects of "school survey," "industrial survey" and "recreation survey." All of these form the basis and enter into the study and adoption of a general city plan.

Berkeley's new ordinance proposes to district laundries, garages and public buildings, in addition to the major classifications; to limit the height of buildings from two and one-half to six stories according to the location; or to a height varying from 35 to 70 feet. It will limit the area of a lot to

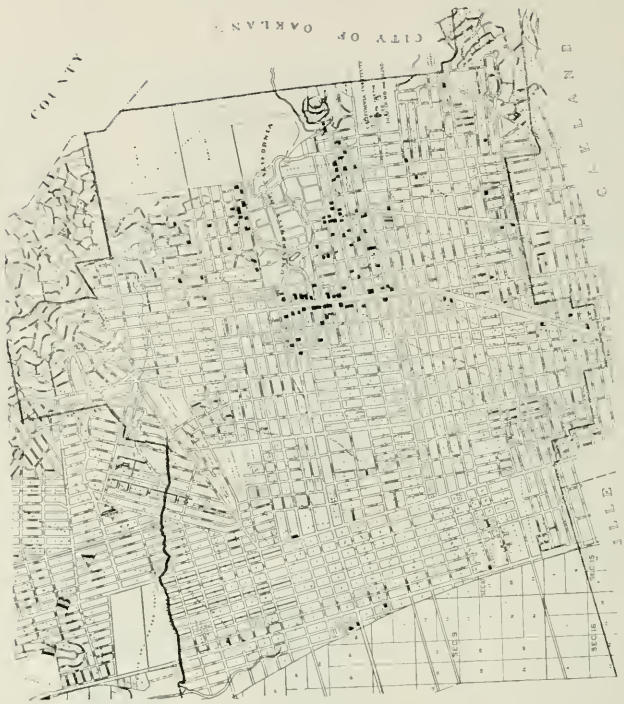


STUDY OF BERKELEY CIVIC CENTER



SKETCH OF BERKELEY CIVIC CENTER

Sketch showing view from Center street looking south across the plaza towards the building proposed as a bridge over Grove street south of the City Hall. In the left foreground part of the proposed sunken garden and of the proposed high school annex. This study and the preceding one were made by Chas. H. Cheney for Dr. Werner Hegeman's report on "A City Plan for Oakland and Berkeley" in 1914.

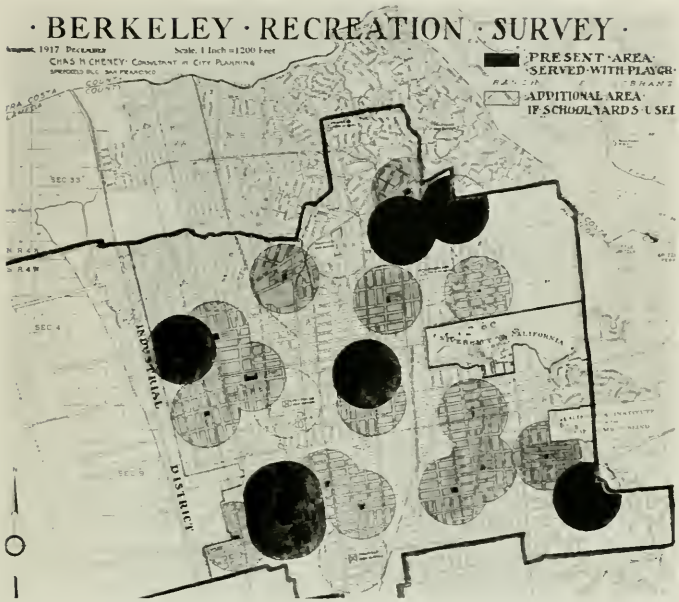


BUILDINGS OVER TWO AND A HALF STORIES HIGH IN BERKELEY
Chas. H. Cheney, City Planner

Out of 11,800 buildings in the city it was found that all but 154 were two and a half stories or under. This map shows how these few are all located in a special section around the University, which therefore requires greater height limits.

be occupied by a building, varying from 50 per cent in residence districts to 90 per cent in factory districts, and will provide for certain open spaces.

It has been held by the Supreme Court of the United States in the recent case of Welch vs. Swasey that different regulations as to height of buildings can be applied to different portions of a city without violating the legal requirements as to reasonableness and uniformity. At one time the courts went no further than to say that cities might prescribe districts within which no business or occupation of a noxious or offensive character might be carried on; that otherwise a man might use his property as he saw fit. Increased density of population and a universal demand for better conditions of living have brought about more liberal interpretations of the police power.


· BERKELEY · RECREATION · SURVEY ·
Scale, 1 Inch = 1200 Feet
CHAS H CHENEY · CONSULTANT in CITY PLANNING
PRESENT AREA SERVED WITH PLAYGR
ADDITIONAL AREA IF SCHOOL YARDS USED
INDUSTRIAL DISTRICT
SEC 33
SEC 4
SEC 9

PLAYGROUND SURVEY OF BERKELEY
Chas. H. Cheney, City Planner

The black areas show districts now served inside a quarter mile circle around existing public playgrounds. (This is the average distance children will go to make use of a playground.) The grey circles show additional portions of the city which would be served if existing school playgrounds were also utilized.

There will be opposition to any plan that may be submitted to the citizens of Berkeley or to the citizens of any other city. Opponents invoke the familiar doctrine of laissez faire, or claim that zoning unduly restricts personal liberty. Some persons assert that it is undemocratic; others that it is socialistic. Some urge that it favors the rich, others say that the whole plan is unconstitutional, and that it throws a cloud upon title. The best evidence in a general way that none of these arguments is sound is that New York, the largest city in the United States, has now been districted for nearly two years, and Mr. E. M. Bassett, counsel for the districting committee of that city, writes to the effect that the testimony of real estate experts is that the adoption of the zoning resolution in New York has stabilized land values and that in the residence districts there has been an increased demand for private residences since the enactment of the resolution; that the validity of the zoning resolution has been attacked several times, but the matter at issue has been settled without consideration of

LAUNDRY RECENTLY GIVEN ONE YEAR TO LEAVE A RESIDENCE DISTRICT, BERKELEY

constitutional questions. Berkeley likewise has had eight or ten districts formed, with only one or two owners in such districts complaining, and none of these ordinances has been attacked in the courts. Proper districting by stabilizing values encourages building and makes cities more desirable places to live in.

The Berkeley plan will be first submitted to the people informally at public hearings to be held throughout the city, as was done in New York. Over ninety per cent of the buildings of Berkeley are residential and there has been a growing demand that the residences be protected from unnecessary intrusions. This has been made apparent at the numerous district meetings held in that city during the last two and one-half years for the purpose of hearing discussions on zoning. Accurate surveys will be made and continuous study of existing conditions will be given by the commission and council before any plan is adopted, in order that no real injustice may be done. It is expected that a plan will be ready for submission within the next few months. Many minor changes will undoubtedly be made after the hearings are had, but the general plan will be adhered to.

One of the problems connected with districting is the fixing of boundary lines where one kind of use gradually changes into some other kind of use. This difficulty, however, is not insurmountable. Injustice can be avoided by fixing the boundaries of the more highly restricted districts at points somewhat within the extreme possible limitations of such a district, thus being a little more liberal than the reasonableness of the law may allow. Berkeley is making progress, as it should, and is attempting to avoid mistakes which retard rather than make progress.

Los Angeles was the pioneer city in the United States to create residence zones. St. Louis and Philadelphia are now working on districting plans. Kansas City is interested, and it will be only a matter of time when every large city and many small ones will have followed the example of Los Angeles, New York and Berkeley.

FRANCES WILLARD SCHOOL, BERKELEY
L. P. Hobart and Chas. H. Cheney, Associate Architects

The Invisible Element in City Planning

City planning implies three things:

1. An organized community spirit
2. The cultivation of civic foresight.
3. A sufficient degree of municipal self-control to make planning worth while.

It involves something more than civic centers and civic beautification--even more than the reservation and development of spaces for public use. It involves public control of the development of essential street utilities, especially transportation. City planning is impotent unless it goes into the realm of the invisible, and takes cognizance of franchises, contracts and vested rights. If these are not brought under control, city planning is largely futile.

Dolar F. Wilcox

City Planning a Part of San Francisco

By FRANK J. TURNER,
Vice-President San Francisco City Planning Commission, President Exposition Preservation League.

Fountain of the Medici, Paris

BY the determined efforts of a small group of prominent men in San Francisco, a piece of city planning accomplishment of considerable importance has been recorded. The Marina Boulevard, a mile and a quarter long, and the Marina waterfront park, with its landing place for aeroplanes and Yacht Harbor, the Palace of Fine Arts and Lagoon, the Normal School on the California Building site, and the perpetuation of the Column of Progress of the Exposition, form a large programme of acquisitions for the city. Yet, by careful planning and working closely together, we are now, after two years, at the point where we see practically every one of these items either already settled or certain of being acquired for the city.

The Exposition in itself was undoubtedly one of the greatest pieces of city planning ever undertaken or carried out at any place in the world. Long before the time for its closing came, the people of San Francisco had conceived the idea that something, from all this great expenditure, must come to the city as a permanent memorial. The Exposition Preservation League was formed two months before its end, to do what could be done and to gather together enough public spirited citizens and funds for the purpose.

From the first this was a city planning organization in fact, although it did not have that title. Many of the usual city planning problems connected with every city development of this kind soon came to our notice and had to be solved. While these improvements in themselves might be desirable, it was evident that if the exposition area should later become the location of cheap industrials that a fine boulevard and Palace of Fine Arts in that location would be not only of questionable value, but liable to be unattractive to the public.

Careful studies therefore had to be made of the future possibilities of the whole neighborhood on the north side of the city, from Van Ness avenue to the Presidio. We found that on the south, Pacific Heights offered practically the finest residence district of San Francisco. On the west was the Presidio reservation of 1500 acres, a magnificent public park maintained by the government. On the east along Van Ness avenue, there was a residence neighborhood rather uncertain as to its future until the Exposition area should be developed. There

PERSPECTIVE VIEW OF THE MARINA BOULEVARD, RUNNING FROM VAN NESS AVENUE THROUGH THE PRESIDIO TO THE BEACH

Chas. H. Cheney, City Planner

was also Fort Mason, another permanent government park, most attractively planted in parts, and which would probably improve with age. On the north was the bay, with the possibility of future dock development unless this water-front were purchased for the city. The location of the belt line railroad extension to the Presidio also threatened to encourage industrials in this area.

Further investigation developed the fact that this north water-front, on account of the extreme rip of the tide, would always be of doubtful value for dockage purposes and that some difficulty had already been experienced by the government in warping vessels into the Transport Docks at Fort Mason. The Board of Harbor Commissioners, on January 31, 1916, issued a statement which considerably cleared up the question of future possibilities of the Exposition site. In effect they said that if industries were located here they would have to pay $12.50 per car higher belt line charge for delivery through the Fort Mason tunnel, then industries located east of the tunnel; that private piers and wharves along the Marina front would be against the State law which gives the State Harbor Board the sole jurisdiction in San Francisco Harbor; that the natural expansion of the harbor was rather towards the south end of the bay, where the concentration of railroads makes ideal factory sites; that the Board believed that the Marina and Yacht Harbor should be continued for

PLAN OF THE MARINA BOULEVARD AND WATERFRONT PARK, SHOWING IN BLACK THE PROPERTY ACQUIRED FOR THE CITY

Chas. H. Cheney, City Planner

Van Ness avenue today—a barren street.

As Van Ness avenue would look if boulevarded.

pleasure boat purposes for which they are much needed, as there was no other location for such craft possible on the harbor front; that the taking of the California Building site for the State Normal School determined the character of that neighborhood; and that if the city should acquire the Marina for a public park, it could at any future time, if extreme necessity required it, be changed into harbor use.

City Engineer O'Shaughnessy estimated that the desirability and the assessed valuations of the Pacific Heights residence district would fall off 20 per cent in a few years, if the Exposition area were allowed to develop in any haphazard, unguided way, of mixed business, industrial and residential uses. That would mean a loss of tax revenue to the whole city and a loss in land values running probably into millions of dollars to the property owners of the adjoining neighborhoods.

The Exposition Preservation League therefore decided to do everything possible to encourage the formation of a high-class residence district on the Exposition area and to secure the passage of some kind of a zone ordinance by the city of San Francisco which would restrict this area to its best possible use —that is to residential purposes.

We found that since 1909 Los Angeles had been keeping business and industry out of residence districts and that Berkeley, Oakland, Sacramento and a great many smaller cities had passed protective zone ordinances to accomplish just the purpose that was necessary in the Exposition area.

In July, 1916, New York City passed a zone ordinance which set aside every block of that great municipality of 6,000,000 people, to be limited hereafter definitely either to residence, business or industry, and at the same time estab-

Trees now grow on one block on lower Van Ness avenue.

The whole street would be greatly improved with trees on all blocks.

Paris boulevards most of the principal business streets.

A busy business street in Paris, with trees.

lished height limits for buildings, varying in different parts of the city as the needs of each neighborhood required; and also limiting the bulk of buildings or rather the area of the lot which could be covered, to ensure a reasonable amount of light and air.

However, to apply such an ordinance in San Francisco, it was found that, while not only the Exposition area but every neighborhood was in need of some kind of protection, there was no existing machinery in our city government at that time to get together the exact facts which would convince people and make the passage of a zone ordinance possible by the Board of Supervisors. The League therefore sought the aid of the Commonwealth Club and other civic organizations to secure the establishment of a permanent San Francisco City Planning Commission, and after three years was successful in obtaining the appointment of the present body in December, 1917. It is generally understood that the first work of this commission when it receives its budget in July will be to prepare careful zoning plans and an ordinance for the protection of the whole of San Francisco.

We are all familiar with the terribly jumbled state of affairs existing in block after block in this city, particularly in outlying districts where what started out to be a good residence neighborhood was spoiled by the intrusion of a garage, or a planing mill, or an undertaking parlor, or a stable, or a sanitarium or some industrial use, all of which businesses we need, though not scattered through residence districts. San Francisco has lost some of its best population to Oakland and other commuting neighborhoods because of our lack of foresight in the proper protection of residence districts. There is no doubt about it that the passage of a reasonable zone ordinance will save us millions of dollars of depressed land values, losses of rents and taxable return to the city.

After the selection of the California Building site for the new State Normal by the special session of the legislature in 1916, the League was most suc-

The tree-lined business boulevards of Washington.

When planted, Van Ness avenue will make as fine a boulevard as any.

Telegraph Hill, 1906.

Telegraph Hill, 1916.

WHERE A ZONE ORDINANCE WAS BADLY NEEDED IN SAN FRANCISCO

cessful in its campaign to accomplish the purchase of the whole Marina waterfront and Yacht Harbor. Under the able leadership of William H. Crocker assignments of approximately 60 per cent of the stock of the Exposition Company were secured and as the assets of the company seemed to indicate that there would be a return on this stock of between 10 per cent and 20 per cent, the League became the trustees for a future dividend of nearly $400,000. With this condition prevailing, the directors of the Exposition company, in the fall of 1916, acquired the Marina front lands from their cash on hand and agreed to hold them for the city until final distribution would be permitted by the courts, it being understood that this property was to be turned over to the city of San Francisco as a permanent waterfront park and landing place for aeroplanes.

SUCH HOUSING DRIVES GOOD WORKERS AND HENCE NEW INDUSTRIES SEEKING THEM AWAY FROM SAN FRANCISCO

Ninety nine apartments in six stories of wood at North Beach, without a single bath—now prevented by State law to a certain extent; but San Francisco should have a zone ordinance to properly protect housing.

So public ownership of the whole waterfront from the Presidio to Van Ness avenue, except for the strip of two blocks wide between Webster street and Laguna street, is now a certainty, and it is to be hoped that at some time in the future this small strip will also be acquired for the city. It is a peculiar fact that until very recently San Francisco, with all its magnificent stretch of ocean and bay waterfront, did not own any of it, except the small piece of ocean beach across the end of Golden Gate Park. The addition of the Marina Park and Yacht Harbor will therefore give the city a unique recreation grounds and one that has long been desired and necessary. Very fortunately, during the past year, the city has acquired two blocks more east from Van Ness avenue for an aquatic park, and this will fit in splendidly with the Marina Boulevard and Park.

As incidental to its development, the League became most interested in the possibility of securing the building of a large aquarium on the Marina, where the fishing fleet of San Francisco could stop and leave the more interesting treasures of their catch for public view, and the aquarium be the means of interesting people in food fish, as well as in the natural history of sea life. Partially as a result of the League's efforts a charter amendment was secured providing that whenever such an institution is provided from private donations or otherwise, the city shall appropriate not less than $20,000 a year to properly maintain it. This assures us an aquarium comparable to those of Boston and New York and worthy of a great seaport of this size. The League also succeeded in interesting, before his death, a very public-spirited citizen, Mr. Ignatz Steinhart, in the project and his will bequeathed approximately $250,000 for an aquarium building to be in charge of the California Academy of Sciences. Whether the Academy decides to locate the building adjoining its other Museums in Golden Gate Park, or on the Marina, is not so important as that San Francisco is soon definitely to have such an institution.

BAY OF NAPLES, SHOWING MARINE PARK

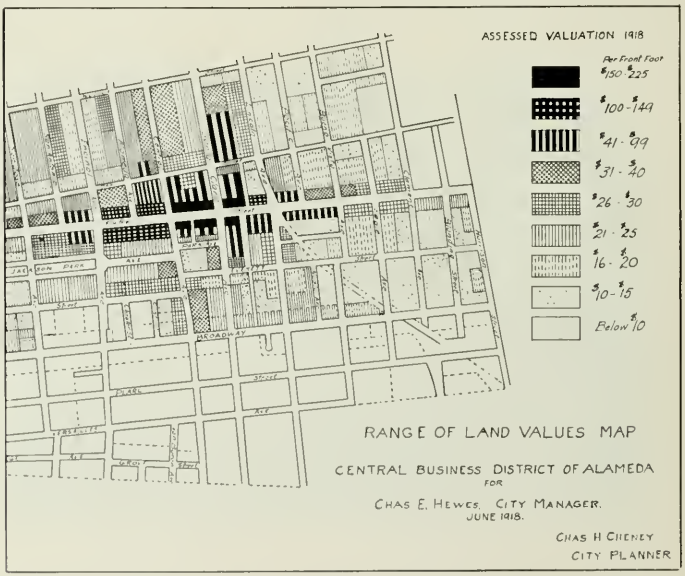
The white building in the center is the famous Aquarium. San Francisco's new aquarium would gain greatly in value to the city and nation if it were located on the Marina at North Beach, where it would be accessible by boat.

The saving of the Palace of Fine Arts permanently to the people of San Francisco, is so well known that it need not be gone into. Due to the very splendid efforts of the San Francisco Art Association, which the League was only too glad to back up in every way possible, the Palace and the ten acres of ground on which it stands in the Presidio, is to be ceded by the United States Government to the Board of Regents of the University of California, who are the trustees of all Art Association property, which thus becomes tax free. The lagoon in front of the Palace of Fine Arts is the principal remaining item of the League's programme to be acquired, and means seem to be at hand for negotiating this during the coming year.

The Column of Progress is such a fine monument, and so worthy of being perpetuated, that the League has long been working to this end. There is $7500 in the bank or invested in Liberty Bonds for this purpose, and it is hoped that eventually this sum may be increased to about $30,000, so that the Column can be entirely reconstructed of permanent material in replica of its present design.

Since the organization of the League in November, 1915, Mr. Charles Henry Cheney has acted as secretary and consultant, making the drawings and diagrams and doing the city planning research necessary to carry out our programme.

The work of the Exposition Preservation League, I believe, has been very worth while. Begun for a definite city planning purpose, it can now be merged with the permanent City Planning Commission with the assurance that what it began in a small way for one part of the city will now be carried on and expanded for the permanent good of every neighborhood of San Francisco.



A VALUABLE GUIDE TO NEIGHBORHOOD CONDITIONS IN ZONING AND CITY PLANNING

Alameda Makes Progress with City Planning

By CHARLES E. HEWES, City Manager, Alameda, California

THE sudden emergencies of war sometimes break the lethargy of years, causing a city to make great steps forward, to catch up with delayed development long essential. For over twenty years the north water front of Alameda has been ripe for industrial improvement, but because of the lack of rail connections or the establishment of a definite industrial zone, no large investments to speak of seemed ready to go ahead. Uncertainty as to where residences should best go and as to where property should best be held for industrial use, has kept owners doubtful as to returns and therefore timid in the building of improvements. Now comes the war, with the urgent need for shipbuilding plants, and forces action. In January we started careful city planning studies and surveys. These have already formed a basis for the execution of public improvements of tremendous import.

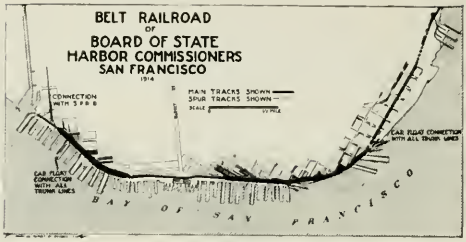
The City of Alameda in May officially adopted a policy of offering every possible facility to industries and shipbuilding plants which may desire to locate here. On the recommendation of the City Planning Commission, and the City Manager, the City Council has set aside all of the north waterfront and that part of the city north of Clement avenue from High street to the Naval Base on the west waterfront, as an Industrial Zone.

In this zone no new residences, hotels, or tenements may hereafter be built, to block the progress of industry. The city has by ordinance declared this to be the place where every industrial spur track, heavy hauling pavement, needed fire protection or other improvement within the power of the city government to order, will be installed. A general four-story height limit has also been established to prevent overcrowding, but tanks, towers, etc., may be run up to any height on fifteen per cent of the lot, so this limitation is not burdensome.

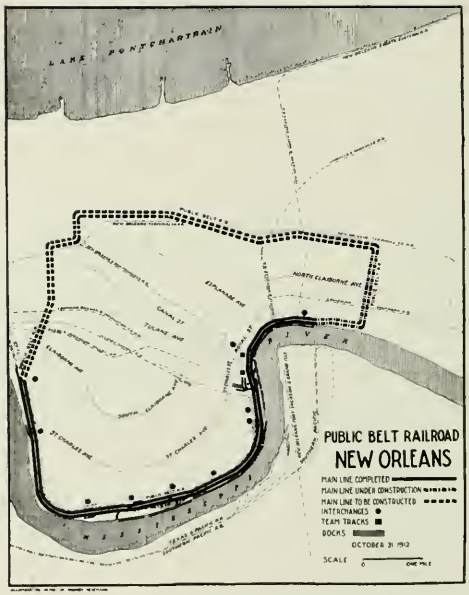
In order that the shippers in this district may not be under domination of one railroad alone, the city has completed a mile and a sixth of belt line railroad, serving all plants and connecting up with the Southern Pacific railroad and with city property on the waterfront, where car floats can later land cars direct from the Santa Fe and Western Pacific railroads. This first unit was paid for out of profits on hand from the Municipal Lighting Plant. The belt line will later be extended two miles farther west to the new Government naval base.

Alameda has also planned the early building of an industrial highway of one hundred or more feet in width for the whole length of the city along the edge of the Industrial Zone, to provide an adequate wide heavy hauling street, convenient to all plants, in order that the adjoining residence streets will not have to be used for hauling, with the resultant protest from home owners that would ensue.

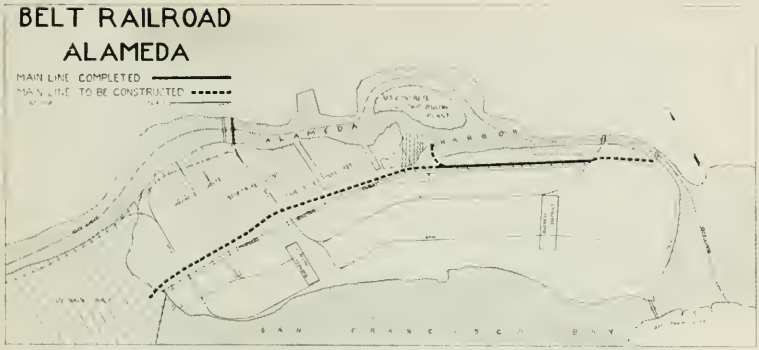
Our city planning studies already show the need for a complete zone ordinance which would establish the various types of residence districts and small business centers, as well as the industrial district, and limit the height and bulk of all buildings. The Industrial Zone had to be established, to meet the war emergency, by a separate proceeding, but it is planned to complete these regulations for the whole city as soon as all our data is ready, probably next fall.



A terminal switching railroad, seven miles main track, 18.3 miles spurs and sidings, cost $560,000, on publicly owned land. Seven locomotives. Owned and operated by the State of California; giving non-discriminatory switching service at a uniform charge of $2.50 ($5 if across Market street.) One hundred and twelve thousand cars were handled in 1913-1914.



A terminal switching railroad (1915, forty miles of track, ten locomotives) owned and operated by the city of New Orleans; supplying non-discriminatory switching service between trunk lines, industries and wharves. One hundred and ninety-seven thousand cars were handled in 1914 at a uniform charge of $2 per movement (including return movement). Before the beginning of the belt operation charges went up as high as $15. From the Hegeman Report



A terminal switching railroad with one and one-sixth miles of track, just completed and paid for out of profits of Municipal Lighting Plant. The recently established industrial zone and proposed industrial highway are also shown. Chas. H. Cheney, City Planner

The first and most useful data map which has been completed, is the Use of Property Map. This shows the location of all of the sixty-eight hundred buildings in the city, and by a system of different colors, distinguishes which are single family dwellings, flats, apartments, ordinary retail stores, garages, laundries, industrial buildings, etc.; the city owned land, including tide lands and water front, the expiration of franchises, railroad rights of way and property, and other valuable information on conditions as they are today. This makes a record in a form that can be grasped at a glance, and that has already served a very practical purpose in the immediate discussion of plans for the improvement of the city. The existing tendencies of growth of the various neighborhoods and the zones or districts which have naturally grown up stand right out so as to be immediately evident.

A brief industrial survey has led us to a better understanding of why industries, ship yards, etc., come to Alameda—what are the conditions most favorable to success in business, and also what are the conditions unfavorable to success, so that we may go about remedying them as quickly as possible.

One of the most acute problems at present is the housing of industrial workers and the means that must be taken to increase the supply of wholesome homes at low cost, or low rentals, within reasonable reach of the Industrial Zone. As Alameda, at its greatest width, is not more than a mile in any point from the industrial zone as established, low cost housing can be put up on almost any available land and be reasonably near to work. However, the range of land values has a good deal to do with where it is profitable to locate such houses. In this connection a Range of Land Values Map, made up from the City Assessor's record, forms the basis for a much better understanding of where property is available in the city. This map will also be very useful in connection with the study of the complete zoning of the city, and for the anticipation of densities of population, future school and playground needs, etc.

CITY OF ALAMEDA
PROPOSED WATERFRONT PARK
PREPARED · FOR · THE · HONORABLE · MAYOR · AND · CITY · COUNCIL ·
MARCH 1914
LEWIS P. HOBART
CHAS. H. CHENEY
ASSOCIATE ARCHITECTS
CROCKER BLDG. S. F. CAL.

STUDY OF THE IMPROVEMENT OF THE ALAMEDA BEACHES, 1914

USE OF PROPERTY MAP OF ALAMEDA
The natural zones for business and industry that have grown up show clearly on this map, as well as tendencies of growth. The black areas are existing industries, the grays indicate the business centers, apartments and flats. Chas. H. Cheney, City Planner

A FACTORY WITH THE MAXIMUM OF LIGHT AND AIR. PLANT OF PACIFIC COAST SHREDDED WHEAT CO., OAKLAND
L. P. Hobart and Chas. H. Cheney, Associate Architects H. J. Brunnier, C. E

Before making permanent city plans, or drawing deductions, we are trying to cover the ground of knowing existing conditions, by a thorough civic survey covering all sides of the question. We have laid out a program which includes in addition to the data already taken, a survey of transportation with particular reference to steam and electric railroads, grade crossings and future suburban service; a housing survey; a survey of streets and traffic arteries, including study of the segregation of main traffic and hauling streets from the minor residence streets, the preparation of a future paving program, and a general boulevard plan; a survey of parks, recreation and the physical needs of the schools, a survey of the beach development of the south side of the city, and of civic and community centers; a complete zone ordinance and building regulations; and a final industrial survey.

From this extensive examination of existing conditions, careful deductions will be drawn and the studies of the permanent city plan developed. In the meantime, ordinances and improvements of the city, as far as are necessary in war time, will be based on the findings as made.

The City Planning Commission of Alameda consists at present of five members appointed by the City Manager, who act in an advisory capacity to him. Mr. Charles H. Cheney of San Francisco, an expert in this line, has been called in to assist with the work.

FRONT VIEW PLANT OF THE PACIFIC COAST SHREDDED WHEAT CO., OAKLAND
L. P. Hobart and Chas. H. Cheney, Associate Architects H. J. Brunnier, C. E.

Work of the California Conference on City Planning

By THOMAS H. REED, President of the Conference

Replica of Bartholdi Statue of Liberty in Paris

CITY planning in the United States began with the idea of city beautification and it has only been by slow and painful degrees that it has escaped from this limitation. It is still in the popular mind more or less confused with the planting of shade trees, sidewalk areas or with more pretentious efforts toward squares, parks and civic centers.

The real end of city planning is the utilization of all resources of the community in the best possible manner for the benefit of all the people. It doubtless includes something of art and beautification, for these things contribute materially to the joy of life. It is, however, more immediately and seriously concerned with the location of industries, the development of transportation and other matters which directly affect the economic wellbeing of the city.

The effects of the absence of intelligent city planning are very apparent in the two chief cities of the Pacific Coast. In Los Angeles a varied and rigid checkerboard pattern of narrow streets has inevitably and hopelessly congested the business district of that city. The same sort of rigid checkerboard laid down upon the irregular and rugged contour of that city has imposed difficulties upon traffic which have hampered immeasurably the industrial development of that city. The historical cows who provided the first street plan for Boston were better city planners than were the men who laid out San Francisco. Whatever may be said of the cow from the intellectual standpoint in travel she always seeks the lines of least resistance. The intelligent location of streets with a view to securing a maximum use of the land of the community is a matter of vast importance.

It is impossible in the brief space allowed for this article to speak of all the economic value of city planning. One other phase of the subject, however, is so important as to demand attention in every discussion of the subject—zoning. Zoning simply means the regulation of the height, and what is more important, the character of buildings to be allowed in each section of the city. There are in every city blighted districts, originally residential, into which factories have intruded to the destruction of property value. All of us have seen and many of us have suffered from such happenings. In a city properly zoned the character of each locality is determined in advance. The districts best suited for manufacturing are set apart for manufacturing, those most advantageous for residences are set apart for that purpose and the investor and home-owner alike are assured of continuity of development.

The California Conference on City Planning was organized in September, 1914, to act as a common rallying ground for all who are interested in the important work we have so briefly sketched. One of the first tasks of this organization was the encouragement of local city planning commissions. There are now twenty-three of these permanently established in this state.

The conference has succeeded in securing legislation authorizing the establishment of city planning commissions in every city and town; providing a procedure for the fixing of building setback lines; requiring that maps of new divisions of land within a city or within three miles thereof be submitted to the nearest city planning commission; authorizing cities to establish zones, limiting the height and character of buildings; and authorizing the State Commission of Immigration and Housing to supervise the work of local planning commissions.

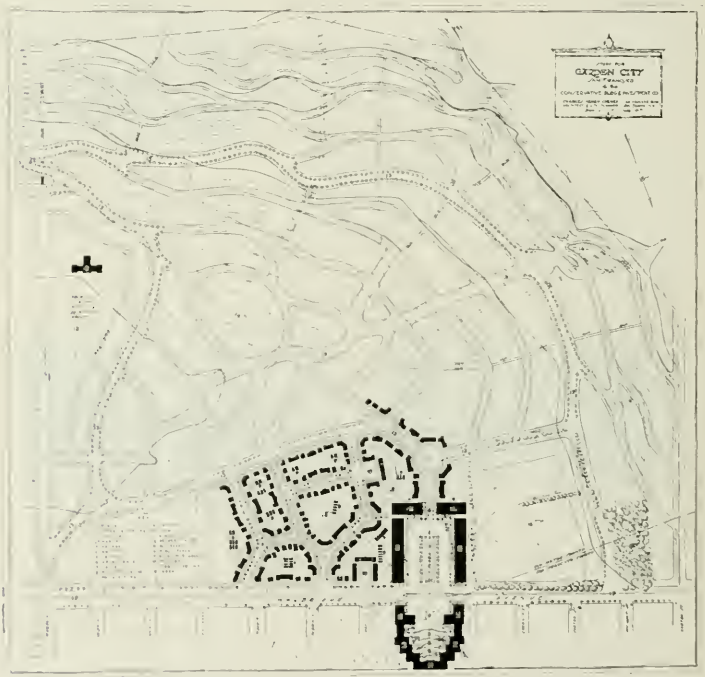
It has also secured the submission to the people of a constitutional amendment permitting what is known as "excess condemnation." This simply means that when a city condemns land for a park, boulevard or street it may condemn also abutting property and after the improvement has been effected sell the "excess" beyond what is actually needed for the work at the advance in price which the improvement has brought about. This is a method of permitting public improvements to pay for themselves. It simply appropriates the value which the public has created by its expenditure. The great ambition of the city planning development of Paris, Vienna and London has been largely carried through by this means.

The California Conference on City Planning will hold its fifth annual meeting at Riverside, California, next fall in connection with the meeting of the League of California Municipalities and we cordially invite all architects, engineers and every one else for that matter, interested in the development of simple and practical city planning to be present and take a part in its deliberations.

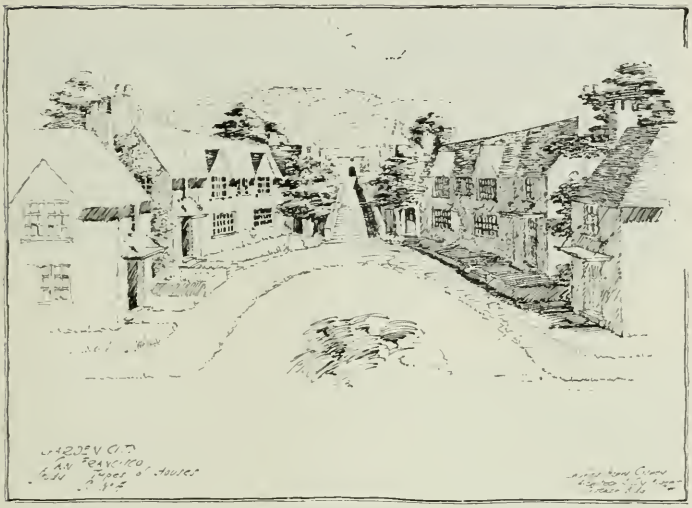
Former railroad bridge over a Philadelphia street, which it was proposed to duplicate to carry more tracks. The Art Jury refused to approve it.

New bridge, replacing former structure, obtained because this city has given its Art Jury power to insist upon decent appearing street improvements.

TYPICAL GROUP OF HOUSES IN GARDEN CITY, VISITACION VALLEY, SAN FRANCISCO
Chas H. Cheney, Architect and City Planner



GENERAL PLAN OF GARDEN CITY, SHOWING BUSINESS CENTER
Chas. H. Cheney, Architect and City Planner



Must California Industries Provide Good Homes for Their Labor?*

By CHARLES HENRY CHENEY, Architect and City Planner

ONE of the most surprising discoveries made by manufacturers generally throughout this country in the brief year since war was declared is that good homes for their labor probably must be provided within a reasonable distance of the plant, and reasonably near recreation, picture shows and the other things that make for contentment, or their labor turnover will become so enormous that practically no efficiency can be maintained. And this discovery comes at a time when great war orders require the employment of thousands of new men to work at a greater speed and efficiency than ever before attempted.

The shipbuilding companies which have been organized in great numbers around San Francisco Bay, at Los Angeles Harbor and at San Diego, were somewhat nettled when their representatives went to Washington for contracts and were asked by the Government how much money they would need for housing employees. From the beginning the Emergency Fleet Corporation at Washington has had great trouble in getting ship workers to stay on the job for long at any one yard, unless good homes for the workers' families were available, so that they could live in reasonable comfort and contentment. High wages had largely resulted in a decrease of contentment among employees except where they had the opportunity to invest in desirable small homes, which always tends to make for a settling down to good citizenship, and for more responsibility of character. In

* Paper delivered at the California Conference of Social Agencies at Santa Barbara, April 25, 1918.

MODEL OF PORTION OF FIRST UNIT OF GARDEN CITY, SAN FRANCISCO
Chas. H. Cheney, Architect and City Planner

San Francisco and other cities the large jewelry houses and automobile firms are doing an enormous business with the newly high paid employees in these shipyards and industrial plants.

The representatives of the California shipbuilding companies, unfamiliar with this condition, almost without exception pledged to the government, that no money for housing would be needed in California, thinking thereby to insure more contracts and greater profits. As a result, a very serious condition of affairs has grown up in the last three months, both around San Francisco Bay and at Los Angeles Harbor.

In the east the labor turnover in many of the yards and war industries plants ran up to several hundred per cent per year. It was found that one yard would take men away from another by promising and giving good homes to live in, near their work. The matter became so serious that the Fleet Corporation decided that the matter must be definitely faced, as it had been in England. It has been found in all countries, and the United States is no exception, that even before the war the housing of wage earners was seldom properly handled or financed except with government aid. Like the necessity for small farm loans, which lead to our Government Farm Loan Bank System, the necessity for small home building loans to be repaid on fifteen or twenty year terms at reasonable interest, exists in America today even to a greater extent.

The urgent necessities of war have brought us twenty-five years nearer a solution of the housing problem. On February 28th President Wilson signed an appropriation by Congress of $50,000,000 for the use of the Emergency Fleet Corporation, in housing shipworkers. An indication of the way this money is being used, may be seen from the arrangement made with the Chamber of Commerce Housing Committee of Wilmington, Delaware, by the Emergency Fleet Corporation in January. Government aid in the form of loans to the extent of $800,000 to every $200,000 raised by the committee for the erection of workmen's dwellings, was promised. The ship yards in San Francisco, and other war industries, had been suffering for months from a housing shortage. Three of the largest concerns were desirous of putting on twice as many men, and could do so, if suitable houses were obtainable. Each of these concerns subscribed $20,000 to the Housing Company, and a fund of $200,000 was soon raised, thus guaranteeing the immediate construction of $1,000,000 of new houses.

A suitable tract of land was selected, and a complete housing scheme worked out by one of the most able of our eastern city planners. This scheme was taken to the government and the following preliminary agreement drawn up with the counsel of the Shipping board:

Whereas: The purpose of said corporation is to secure land and construct dwellings thereon to be rented or sold to industrial workers of the city of Wilmington and vicinity, the first offer of same proposing to be made to those industrial workers engaged in the building of ships or shipbuilding material for the uses of the United States Government; and

Whereas: The corporation proposes to secure a loan from the United States Government of $800,000 for every $200,000 of capital provided by said corporation upon the following terms, to wit:

(a) That said loan is to be made a first lien upon all of the property of the corporation.

(b) That said loan is to be made to said corporation in installments from time to time of 80 per cent of the total cost of land and construction of each particular house or lot of houses as the same are constructed by the corporation, that said installments of said loan are to be made as the construction proceeds, as follows:—

1. When the cellar or cellars are dug.
2. When the first floor joists are in place.
3. When the second floor joists are in place.
4. When the roof is on.
5. Upon the completion of the building.

And the amount of installment to be loaned upon the basis aforesaid to be absolutely fixed by the certificate of the architect, or other supervisor in charge of said construction, whose estimate of eighty per cent of the cost of land and construction at the particular periods aforesaid shall be final and binding upon both the government and the corporation.

(c) That said loan shall bear interest at the rate of 4 per cent.

(d) That said loan shall be repaid to the government of the United States at a minimum rate of 3 per cent per annum, with total repayment to be completed on or before fifteen years from the date thereof.

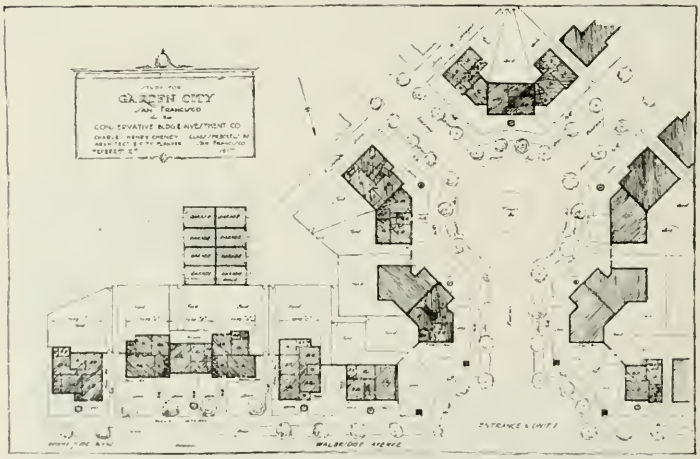
(e) That in the detailed agreement to be entered into between the government and the said corporation, provision shall be made whereby the government will agree to release the individual houses from the lien of said mortgage upon the payment to the government of such portion of said mortgage as may at the time, be prorated upon said house amortized on the basis set forth herein.

(f) That the corporation shall have the right of liquidating at any time on or before fifteen years from the date thereof, and upon said liquidation it being agreed that after payment to stockholder, of an amount equal to the par value of the amount of stock subscribed and six per cent of the amount of said subscription from the date thereof to the date of liquidation, the corporation shall pay to the United States

MODEL OF A PORTION OF THE FIRST UNIT OF GARDEN CITY

Chas. H. Cheney,
Architect and City Planner

STUDIES OF GROUPS IN GARDEN CITY
Chas. H. Cheney, Architect and City Planner



PLAN OF A PORTION OF FIRST UNIT OF GARDEN CITY, SAN FRANCISCO
Chas. H. Cheney, Architect and City Planner

THE PRACTICE OF PROVIDING SUITABLE HOMES FOR WORKERS IS IN ITS INFANCY IN AMERICA. ENGLAND HAS SOLVED THE QUESTION WITH CHARACTERISTIC BRITISH SLOWNESS AND THOROUGHNESS. Courtesy Hoggson Magazine

Government, the entire sum loaned as aforesaid with interest at four per cent, provided that said sum is available for said payment upon said liquidation, provided however that if the assets of the company as so liquidated shall not be sufficient to pay said loan in full, that the Government will accept such sums as said company may be able to pay upon said liquidation, said payment, however, not being less than 85 per cent of the amount of said loans.

It being further understood that the corporation in lieu of liquidation as aforesaid shall have the right at the termination of fifteen years as aforesaid to have the assets of the company appraised by one person chosen by the corporation and one person chosen by the United States Government and an umpire to be chosen by said two persons so appointed for the purpose of making an appraisement of the assets of the company at said date, and after deducting dividends of six per cent per year to stockholders as aforesaid to arrive at an amount to be paid by said company to the United States Government on an amortizing basis as indicated aforesaid, whereupon the said company shall have the right to pay the balance of said loan to the United States Government and continue as a going concern, free from any obligations of trust whatsoever to said Government.

(g) That the corporation shall be allowed to make such reasonable overhead charges as may be necessary and proper in carrying on the operation as aforesaid, there being no charge, however, for the services of the persons who serve as directors of said corporation.

Now, therefore: In consideration of the mutual promises and obligations made by and between each of the persons who sign this agreement and the corporation to be formed as aforesaid it is agreed by each of the persons undersigned and they do hereby agree to subscribe and to pay for the stock at par, of said proposed company, set opposite their respective names, said subscriptions being conditioned upon the securing by said company or its representatives a total amount of two hundred thousand ($200,000) dollars. And it being further understood that said subscriptions shall be called by the corporation from time to time on the basis of 20 per cent of the cost of construction ascertained in the same way and at the same time as set forth above for the call of the loan from the United States Government.

TYPICAL GROUP OF WORKERS' HOMES, BUILT FOUR TOGETHER, IN AN ENGLISH GARDEN CITY Courtesy Hoggson Magazine

The Government is following a similar plan of loaning to private companies which will limit their profits to 6 per cent, at other shipbuilding centers, where the housing need can be shown to affect the output.

In March of this year, the situation at Los Angeles Harbor began to be seriously acute, and at the request of the Chambers of Commerce of San Pedro and other cities, the State Commission of Immigration and Housing sent Mr. Mark C. Cohn, Director of its Housing Bureau, to make a careful survey of existing conditions. He reported that 4100 men were at that time forced to go 25 miles or more, each way, daily to their work, with a round trip fare of 35 cents, with a long time in making the trip wasted daily, and practically no houses of any kind to be had in San Pedro or Wilmington. The managers of the shipyards strongly urged the formation of Housing Companies to build for the emergency, but when these companies applied to the Government for aid in loans, on the same basis as at Wilmington, Delaware, the Government replied that the shipping companies in getting their contracts had stated that no housing money would be needed, and that for the present at least the Fleet Corporation would not make any loans on the Pacific Coast.

Meanwhile, two new shipyards have started up at Los Angeles Harbor and existing plants are doubling their number of employees, so that conditions are daily getting worse. There are of course from 150 to 200 individual

THESE WORKMEN'S HOUSES IN HAMPSTEAD, ENGLAND, SHOW THAT CONFORMITY TO A GENERAL ARCHITECTURAL SCHEME PRODUCES EFFECTIVE RESULTS

houses being put up by scattered owners who have sufficient funds in hand, but this will hardly do much to solve the need of 1500 to 2000 houses, which should be provided immediately, and for which local capital is not and will not be available.

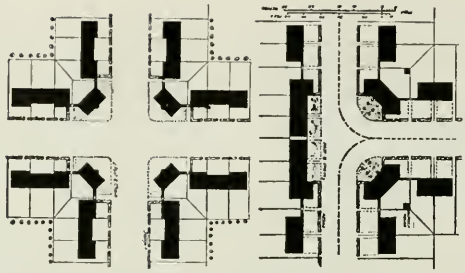
The situation in San Francisco, while not so serious as at Los Angeles Harbor, is beginning to be critical. The many thousands of new employees at the Bethlehem Shipbuilding Co. and at the Western Pipe & Steel Co.'s plant, together with the increased number of employees at the other industrial plants along the bay shore, has caused the formation of a Garden City Homes Company which will build 2000 houses in Visitacion Valley, if the proper bank loans or Government aid can be secured. This company proposes, on a 6 per cent limited profit basis, to furnish the best type of homes for workers, and is financed by the largest employers of the city, who believe that the skilled workers will gladly live in San Francisco, instead of in Oakland or across the bay, if the same attractive small bungalows and houses are provided, with trees on the streets, and the home neighborhood protected. They propose to provide a home for an average of $2500 for a five-room house and lot, on terms of a small payment down, and $25 or less per month installment, including interest. They have made their plans to offer these improved facilities, not now obtainable in San Francisco, with the following definite objects:

OBJECTS OF THE GARDEN CITY PROJECT NOW BEING STARTED IN SAN FRANCISCO

How the company will improve home building methods—

By elimination of speculative profits, all earnings over 6 per cent to be used for the benefit and development of the property.

By distributing the payments for a home over a period of ten to twenty years, thereby bringing it within the reach of all who desire to improve their home condition.



TWO WELL CONCEIVED ROAD JUNCTIONS, SHOWING PROPER PLANNING OF THE BUILDINGS ON THE CORNER LOTS IN A GARDEN CITY

This diagram shows what is understood by "grouping of houses" instead of "lining them up." A number of the buildings are grouped to form an architectural unit. Furthermore they are brought into relation with neighboring units and a balance and harmony attained between the buildings that face each other across the narrow roadways. Little squares and interesting road junctions are formed, giving character to entire streets. These examples are taken from Mr. Raymond Unwin's book, "Town-Planning in Practice," and illustrate what this master-builder has many times carried out in Hampstead, Letchworth, and other garden cities.

By wholesale operations and efficient management, thereby effecting economies in construction.

By selling only complete, finished houses on improved streets—no scattered developments, thus assuring each purchaser as to the future character of the neighborhood.

By limiting the number of houses to a maximum of eleven per acre, thereby avoiding the disastrous overcrowding of homes.

By scientific planning, along well tried garden suburb lines, determining in advance the character and arrangement of roads and houses, thereby securing the maximum of restful home life, of attractive and practical values.

By providing for community buildings, playgrounds, and schools, and thereby promoting the social atmosphere of the neighborhood and by engaging in other beneficial undertakings, as may from time to time prove feasible.

By laying out allotment gardens where the wage earner may successfully carry on intensive vegetable gardening which under competent instruction will go towards paying the cost of the home.

By protecting every house and lot with reasonable restrictions, making every lot owner without exception a member of a mutual improvement association, and subject to a small annual tax for the upkeep of gardens, streets, parks and the collection of garbage, enforcement of restrictions, etc.

By the protection of each purchaser in case of his having to move away on account of losing or changing his job, to at least a reasonable amount of his paid-up equity, the company taking back his house and giving him bonds in that sum, so that he cannot lose.

By providing a home district for workers, which is not subject to an employment required in any one company—in other words a mutual home building association, with full liberty of independent action on the part of the purchaser.

By offering every purchaser the opportunity to acquire stock in the company to 10 per cent of the value of his home, thus giving the residents participation in the ownership and management of the property.

Such housing companies do not now exist anywhere in California largely because it is impossible to get a long term loan from any bank, by which small homes can be offered to workers on a 15-year payment basis. Government aid seems the inevitable solution. England has been extending it for many years. Toronto, Canada, has a Housing Company for which the city guaranteed the bonds for $850,000, provided $150,000 of local capital was put into the company, with profits to be limited at 6 per cent. There are half a hundred housing companies, organized by industries throughout the East, to offer cheap, attractive houses with a net return of only 4, 5 or 6 per cent of capital invested.

Congress has now passed a new appropriation of $60,000,000 to be put into the hands of the Department of Labor, to take care of the housing of in-

This arrangement in many ways is considered as the last word in Europe, where cheap quarters on comparatively dear land have to be provided. This grouping in continuous rows is more satisfactory than the leaving of gaps measuring only a few feet between party walls. The individual frontages of the unit in these rows should not be less than sixteen feet.—From the Hegeman Report.

SMALLEST TYPE OF EUROPEAN WORKERS' HOMES WITH GARDENS GROUPED IN ROWS

dustrial workers wherever war contracts are being carried on, and seem to require it. Even this appropriation will make but a small impression on the general needs of the country at this time. It has been estimated that perhaps $500,000,000 will have to be loaned out by the Government to finance housing in different parts of the country in order to guarantee the stability and efficiency of workers of war industries.

"Factory efficiency is dependent upon success in obtaining and holding employees who are well housed, at low rates, in a good environment."

California industries have reason to act most seriously on this housing matter. It is certain that the shipbuilding must go on for ten or fifteen years after the war, and most of the other large plants supplying war contracts are practically of a permanent nature. The housing of employees therefore should be solved in a permanent way that will insure their being contented enough to stay on the job, and that they may become permanently available.

California is entitled, and will get government loans for housing, on as good a basis as that granted Wilmington, Delaware, but only when our manufacturers and shipbuilders recognize this new turn in the industrial situation, and that private capital at this time, for financing housing companies on a comprehensive scale, is almost impossible to obtain. All our available funds are going into Liberty Bonds, to the Government, as they should, and the Government should loan them back to us where needed. Two million dollars loaned on the Wilmington basis at Los Angeles Harbor, and another $2,000,000 or possibly $3,000,000 at San Francisco, at this time, would enable the completion of Garden City projects which will furnish the best kind of housing at the lowest terms, within a reasonable time. In our opinion, Government aid is bound to come anyway, but if we wait another six months, the danger is that with winter upon us, a lot of cheap temporary shacks will be built with which no self-respecting workingmen can long remain contented, instead of attractive small homes, well laid out, in well planted and well protected garden suburbs, where he can assume the responsibility of permanent citizenship and find the greatest degree of comfort and contentment.

WELL HALL, NEAR WOOLWICH, IN ENGLAND, IS A WAR-TIME INDUSTRIAL HOUSING DEVELOPMENT PLANNED ON ENDURING LINES Courtesy Hoggson Magazine

California Urges Practical City Planning

By MARK C. COHN, Director of Housing and City Planning, State Commission of Immigration and Housing.

THE urgent necessities of war have served, as never before, to force upon us a much more careful planning and regulation of living and housing conditions, also the planning of industrial facilities and of working and labor conditions. The zoning of our cities along practical lines as a war expedient, as an impetus for better business, and in the interest of a broader and healthier community life has been repeatedly urged by the representatives and members of this Commission. We look forward to the time when there will be established a city planning and housing commission in every incorporated city and town in California. These commissions will have the full co-operation of our bureau.

Now is the time for California cities to get busy upon the study of better housing and living conditions. America is called upon to conserve her resources. Good housing is of vital importance to the conservation of human life, conservation of human energy and of the man power. There will be less opposition now when people are less selfish than ever before and understand the benefits to be derived from the establishment of regulations that guarantee the greatest good to the greatest number. At present, and probably for several years, for patriotic reasons we are restrained from all building activities. Therefore our cities can sit down calmly and carefully to plan out for the expansion of building and the greatest economy possible in improvement when conditions permit us to resume the building of homes and public improvements on the large scale necessary to catch up with the years that we aregetting behind.

THERE IS USUALLY A GARDEN, A BREATHING SPACE, VINES AND TREES. REAR VIEW OF HOUSES IN EARSWICK, AN ENGLISH GARDEN CITY

Men from all our cities are now in France. That little war-torn nation is making city plans in these times for the rebuilding necessary as soon as the war is over and is establishing zone ordinances and building regulations. They are tearing out factories and moving them to other districts, preparing for the building of model housing projects, applying the English garden city principles to these projects and providing for those things that will be conducive to the best conditions for the workers. If France can do these things in the midst of war, American cities may well profit by the example.

The ideal in better housing is possible only when permanency is assured. Housing of the right kind is as important as medicine and surgery. One is preventative while the other is palliative.

Sensible zoning, city planning and housing ordinances in all cities is in the interest of better business. Misunderstandings and consequent opposition is bound to develop, but it will be largely ignorant and selfish opposition and unwarranted. This opposition largely comes from the same class of people who oppose every kind of progressive legislation.

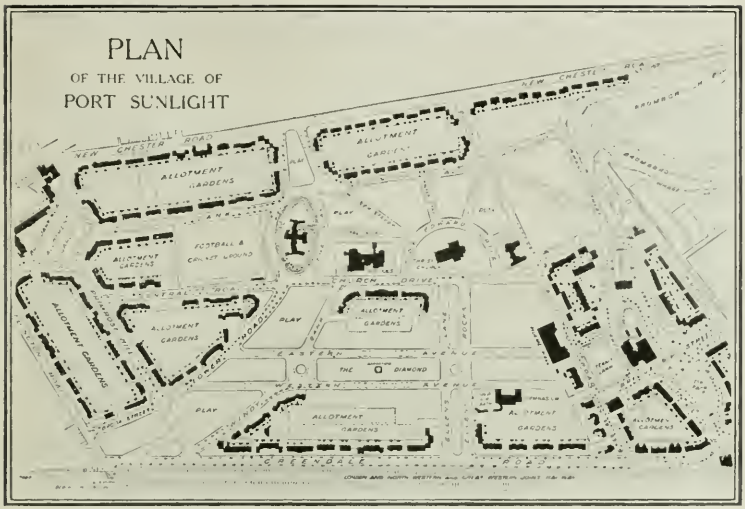
In New York City the realty men, before their zone ordinance was passed, opposed the height limitation of buildings. These same men now say that they were mistaken and that they have stood in the light of their own interests. Our Commission has found that in nearly every case where strong opposition developed against the recommendations of the Commission the opposition was overcome as soon as the objects and purposes of the recommendations were understood.

The sudden urgent need of industrial housing for ship workers and others on account of the war was anticipated by our Commission as far back as the year 1914 when a study was made of the best type of homes for workers in the industrial centers of the country and how California could best undertake to

TENEMENTS
AS THEY EXIST IN SACRAMENTO
There are already 3000 in San Francisco
AND 1300 IN LOS ANGELES
AND THEY ARE INCREASING.
Eastern Tenements.
Shall we wait for conditions like these?
PLAN NOW TO STOP TENEMENTS IN YOUR CITY
and regulate the ones you have
DISEASE
"Health is Wealth"
The working people of America lose $772,892,860 a year because of Sickness.
Sewage. Garbage. Filth. mean Flies and Disease.
A DARK ROOM IS A CONSUMPTION FACTORY
The commonest problem and the worst... what about Typhoid?
COMPARATIVE INFANT MORTALITY
In a typical block on Telegraph Hill, San Francisco, in one year 54 infants died, under 5 years. In a typical block in Western Addition at the same year 4 infants died.
IN ONE CITY BETTER HOUSING HAS REDUCED THE DEATH RATE BY 65%
IS THIS YOUR CITY?

PANELS IN "BETTER HOUSING" EXHIBIT PREPARED FOR THE STATE COMMISSION OF IMMIGRATION AND HOUSING IN 1915 Chas. H. Cheney, City Planner

STORE IN AN EASTERN INDUSTRIAL SUBURB
Ballinger & Perrot,
Architects and Engineers



PLAN OF PORT SUNLIGHT, ONE OF THE FIRST GARDEN SUBURBS OF ENGLAND
Courtesy Hoggson Magazine

solve this problem. A study of the needs of California was also made by the Commission. With this information an educational campaign was launched throughout the state pointing out the necessity for practical housing and city planning laws. As a result of the study made by this Commission and with the co-operation of the cities of the state, and many organizations and individuals, we were successful in having enacted by the legislature three of the best housing laws in the country and also city planning and zoning laws. Each city, town and county in the State should bend every effort to the end that these laws be diligently and impartially enforced. Every civic organization in the State could well afford to spend the time to become acquainted with the provisions of these laws and also with the objects and purposes thereto so that a more harmonious understanding may prevail.

Now that the Federal government has officially decided to undertake the financing of industrial housing it is probable that we shall have some more or less model housing schemes developed in California. It is to be hoped that these projects will follow the best city planning, housing and architectural advice. In England and in the East such schemes have proved successful and have provided homes at moderate prices that are solving to some extent the housing problem. In California there does not appear to be any reason for the building of temporary shacks which will cause trouble later, if the local communities co-operate with the government authorities with forethought and a firm determination to solve the problem on a permanent basis.

The Tenth National Conference on City Planning at St. Louis, Missouri

Vase, Versailles

ZONING and Industrial Housing were the principal topics of discussion at the Tenth National Conference on City Planning held in St. Louis, the last week in May. The St. Louis City Planning Commission has been for some time making special studies preparatory to the zoning of this important city, and had asked that zone ordinances form the main subject at this conference.

INDUSTRIAL ZONING.

A valuable paper on Industrial Zoning was presented by Herbert S. Swan, Executive Secretary of the Zoning Committee of New York City. It is interesting to note that while Tammany succeeded in stopping temporarily at least the city planning work of New York City when it took over municipal control in January, the large property owners of the city have leagued themselves together to maintain a permanent, unofficial Zoning Committee, with a legal staff and secretary to guard the New York Zone Ordinance, and any amendments to it that may be proposed, for the protection of their property interests. Mr. Swan said in part:

"That the relative competitive strength of a city in the domestic and foreign markets of the world is frequently conditioned to quite as great an extent by the arrangement of the industries within the city as by the availability of raw materials and that the proximity of a consuming public is just beginning to dawn upon us. Economical means of transferring and distributing freight within a city contribute proportionately no less to the development and expansion of its commercial and industrial hinterland than efficient outside connections by rail and water. Heavy terminal costs are as much a drag upon a city's prosperity as high freight charges. Every cent saved in needless trucking means just that much more available for the extension of the city's commercial and industrial radius by rail or water.

"When factories and warehouses are not located with reference to freight terminals, a situation frequently develops where the down town streets are unnecessarily congested to the inconvenience and financial loss of the whole city. A similar condition results where mutually interdependent industries locate in widely separated parts of the city instead of near one another. It is maladjustments of this kind that zoning is designed to remedy.

"If experts on transportation are correct in telling us that the movement of freight increases as the fourth power of the population, that the freight traffic doubles every time the population increases twenty per cent—then the street congestion experienced by our large cities of today is as nothing compared with what our larger cities of tomorrw will be obliged to endure. They will be compelled to adopt every possible means in order to keep traffic moving or choke under their own growth.

PROVISIONS OF CALIFORNIA ZONE ORDINANCES COMMENDED.

"A special feature of the Berkeley ordinance, and of the proposed Fresno ordinance, is the exclusion of residences from the heavy manufacturing districts and the nuisance districts. This plan has many distinct merits. The very reasons that make it desirable to exclude factories and nuisances from residence districts, apply with equal, if not greater, force when it comes to prohibiting the erection of new dwellings in districts set aside for industrial develop-

ment. If it is unhealthful for people to live near a factory isolated in the residence district, it is all the more unhealthful for them to live in a home isolated in the industrial district. To permit residence buildings in factory districts, moreover, tends to increase the size of these districts beyond their natural requirements as the area included in this classification must also make provision for the erection of a considerable number of dwellings.

"Industrial zoning as applied to factories has often been advocated with a view to effecting a decentralization of population, it being supposed that a judicious distribution of factories would at the same time prevent a piling up of the workers in congested tenements.

"To scatter the factories for no better reason than that many factories assembled at one place will require a large number of employees is to ignore some of the fundamental facts in the case as a decentralization of a city's industrial development does not necessarily mean a zoning of workers by place of work. In the first place the different members of a workman's family work in different places. If the head of the family lives where he can walk to his work, will not his daughter who clerks in a department store, or his son who keeps books in a down-town office, have to ride? In the second place, small industrial areas can be used intensively, especially when occupied by light manufacturing. In New York there are blocks improved with loft buildings accommodating more than 5,000 operatives.

"Is not the answer to the dilemma that intensive industrial development is no excuse for a congestion of population, that a decentralization of population can go hand in hand with a concentration of industry? Factory centers like business centers must have convenient transportation. If there are many workmen employed in one place, it is not essential to house them on the same area which a smaller number would inhabit more sparsely. Through the construction of transit lines the housing area can be enlarged to such an extent that each family will still live in good surroundings.

"For years the pecuniary losses suffered on account of unregulated building in certain sections of New York have not only equalled, but exceeded those suffered from fire. Investigation might show that this state of facts was true of the metropolis as a whole. The city that does not protect its citizens against fire is generally considered derelict in its sense of public duty. The same is rapidly becoming true of the city that does not protect its citizens against unregulated building."

ZONING OF RESIDENCE SECTIONS.

This subject was discussed by Dr. Robert H. Whitten, Secretary of the City Planning Commission of Cleveland, Ohio, and former Secretary of the City

(Continued on page 114)

Fountain, Villa Medici, Rome

The National Conference on War Housing

By ELINOR WOLF

Versailles

TO what extent shall war workers be housed in temporary barracks—in permanent homes? Shall houses for war workers be rented or sold? Shall we provide for the housing of many women workers? What is the best way to house the woman worker? These questions, which are questions of policy arising in connection with projected Government housing operations in shipbuilding and munitions centers, were the subjects of the live discussions which characterized the first American conference on war housing, held at Philadelphia, February 25, under the auspices of the National Housing Association.

The conference, presided over by Mr. Lawrence Veiller, secretary of the association, was attended by manufacturers, real estate men, architects, city planners, contractors, builders, labor leaders, civic and social workers and housing experts to the number of 244 from seventeen States. There was no reading of papers—five-minute discussions only were permitted—as a result of which a much more general and conclusive expression of opinion was obtained.

More or less of the administration viewpoint on the several questions raised was expressed by Mr. Frederick Law Olmsted, city planner, who for months has been in Washington on emergency construction work, and by Mr. Philip Hiss, chairman of the sub-committee on housing of the advisory commission of the Council of National Defense. English experience as furnishing a criterion for American policies was described by Mr. Thomas Adams, advisor of the Canadian commission of conservation, and Mr. Frederick L. Ackerman, architect, of New York City. Mr. Joseph Richie, general organizer of the American Federation of Labor, spoke for the workers.

Permanent as against temporary construction in government operations was endorsed.

Mr. Olmsted pointed out that the sole interest of the government in housing, at the present moment, lies in its bearing upon the shipping and munitions industries. Housing, in this connection, is purely a means to an end and that end is the quick concentration and stabilization of the labor supply in important centers. Government interest in the type of construction is concerned chiefly with the elements of speed and salvage value, provided the housing is good enough to secure the welfare and contentment of the workers.

Speaker after speaker, however, emphasized that the welfare and contentment of the worker demand permanent construction—or a type of temporary construction that would offer little advantage as to speed and less as to salvage value.

"Shipyard workers and munitions workers are generally men with families," said Mr. Richie. "They are a group of men who want to be housed permanently. If you make a temporary home for a man, you make a temporary job, and we don't want men considering that they have a temporary job in the shipyards at this time."

English experience as described by Messrs. Adams and Ackerman adds weight to this statement, for in many cases where England permitted the plea of expediency to justify makeshift construction, she found it necessary, for the sake of stabilizing the labor supply, to undo much of her work and to do it over on more substantial lines. She found, moreover, that "the worker must have more than shelter for his head, and the wastes disposed of; he must play and be

recreated," and that "housing" means not merely houses but all the amenities of the modern community.

It was shown, furthermore, that consideration of community as well as individual welfare adds another count in favor of permanent construction. Temporary housing, as demonstrated repeatedly, too easily deteriorates into slum conditions, while permanent houses of good character would tend to elevate the standards of the community.

The objection that there exists, in the zeal of those advocating permanent housing, the danger of building beyond the capacity of the community to absorb, was answered first, by the argument that industry tends to seek those communities in which the housing is adequate, and, second, that in the readjustment which will follow the war, the probabilities are in favor of the occupancy of the better houses and the vacation of the unfit, thus automatically eliminating undesirable conditions.

The spirit and conclusions of the conference are perhaps best summed up in the words of Mr. Thomas Adams: "Take a large view of this question. Establish these new communities upon a permanent basis. Create garden cities now because you have an opportunity you never had before, and recognize that in this country you are increasing your population twenty or twenty-five millions every fifteen years and that if you build houses with 100 or 200 million dollars of government money you are only building one-sixth of the yearly demand for new houses in this country and you need have no fear of the danger of having an excessive supply after the war. Do not fail to recognize that you had a housing problem before the war and that you are going to have a housing problem after the war quite independent of the conditions created by the war. That, I think, ought to have a considerable influence upon the method of approach and the consideration which you apply to this question of war housing conditions."—National Municipal Review.

The following wire was sent the Conference from California:—

"We are extremely interested and recommend against temporary barracks; favor permanent homes. Houses should be sold wherever possible on small first payment and monthly installments not exceeding twenty-five per cent of monthly earnings. Women workers where supporting families should be treated same as men. Federal Government must help. Bank loans too small and too short term. Private capital all going into Government loans. Same problems exist on the Pacific Coast as you have in East. We find principal difficulty in financing under war conditions. Secretary McAdoo should be asked to lay stress on exception of this class of building from his general ruling against home building and to give such exception wide publicity. Signed (Archbishop) E. J. Hanna, John A. Britton, Mrs. Abbie E. Wilkins, Geo. C. Holberton, Chas. E. Hewes, Thos. H. Reed, Chas. H. Cheney."

Luxembourg, Paris.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. LIII. JUNE, 1918 No. 3.

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WORK OF THE CITY PLANNER

Years ago Mr. Cheney had the foresight to concentrate his work on that side of an architect's experiences which we term city planning. It seems to me that the words "city planning" are misleading, and that many think that a city planner is an engineer who squeezes out the largest number of lots to the acre and then plants a few geranium bushes in front of the lots.

The city planner's work is rather that of a prophet than mere arrangement and hygiene. He must get all the data he can, and from this data he must mold this and that in such a way that the town or city will ultimately grow into a thing of healthfulness and beauty.

The city planner evidently must have the vision and a good deal of the training in analysis and study of design required to produce an architect. He must also have understanding of engineering, particularly of practical building requirements and of municipal engineering improvements. He should have some knowledge and feeling for planting, parks and landscape design. Yet, if he cannot balance this knowledge and apply it with an understanding of the laws of economics, sociology and municipal government, his city plans are not liable to go ahead, however worthy in design they may prove.

Up to about fifteen years ago all our city plans were in the hands of local engineers who had very little opportunity or encouragement to compare their local problems with the results in other cities. Then came the day of the architect with great "city beautiful" plans that so far overshot pocket books and legal obstacles that few cities were able to do anything with their plans. The city planners are now striking a happy medium between these two extremes, which seems to be getting hold of municipal officials and those with power to carry out the city plans developed.

The need of California cities to have careful and thorough city plans made is enormous. Only twenty-three cities

now have city planning commissions. We should have every one of our two hundred and fifty-odd incorporated cities and towns planning officially for the great future which lies before us. Our cities are so young. What little natural charm of landscape setting and location they may have is too often needlessly ruined. A little careful planning would go a long way and make them more attractive, comfortable, convenient and economical to live in.

These are only the beginnings which the general public can be conscious of. The activity leads to the time when the public will understand the better things so that they will co-operate with each other, and even become aware of the fact that we spend thousands of dollars on the front elevation of a twenty-five-foot wide, ten-story building, but sixty-five cents for the party walls and rear.

There are things enough to talk about to fill a book, but here we are speaking of the usefulness of Mr. Cheney's work, and it is to be hoped that the public will realize that it is the business of every resident of the town he lives in to be vitally interested in city planning and all its ramifications.

B. R. Maybeck, A. I. A.

COLOR IN ARCHITECTURE

Mr. R. Germain Hubby, a member of the American Institute of Architects, recently read an interesting paper before the Southern California Chapter of the Institute on "Color and Its Application in Architecture," much of which recalls a similar paper prepared some years ago, and published in this magazine, by Mr. Louis C. Mullgardt, of San Francisco. Mr. Hubby makes a number of points that are well worth bearing in mind. For example:

Color will materially affect the proportion and the modelling of any building and should for this reason be studied in with the design. A projecting cornice, if brought into relief by the use of a color strongly differentiated from the house, is apt to look heavy and overloaded. Also the part color plays in mouldings is of the first importance. Mouldings worked in unfinished wood must be made clear cut and deeper and sharper than would be the case with painted mouldings. Painted woodwork or any material which is uniform in color, shows the varieties of shadow much more clearly than any material which has a natural variation of color.

In the selection of a color scheme it is well to bear in mind that what artists call "vibration" is only obtained by contrasting a warm color with a cold color. Combinations in which warm colors prevail are more agreeable than those made mainly of cold colors, while it is also true that the finest harmony of complex or various colors is that in which there is a proper balance of both warm and cold colors, so used that they enhance each other. One with a very limited sense of color, may, by a sure definition of warmth and coldness in his tones, arrive at a great charm of color harmony in his work. Bodies reflect a considerable portion of white light as well as colored light, according as the surfaces are smooth, glossy, polished, rough, channeled, etc. Materials of different textures but of the same tone and hue are always harmonious.

Yellow is a warm and advancing color and is especially useful as an ornament on other colors. Orange is the most intense color and should be used sparingly as it needs great care as to the quality and quantity of other colors to balance it. Violet is a cold color, red-violet, warmer. It is grave and dignified and being a retiring color, it will serve well as a background for more luminous colors upon it.

Blue is cold and retiring, especially suited for backgrounds. Green may be cold or warm, retiring or advancing according as it approaches blue or yellow.

When one studies the great scale of greens as seen in a landscape lit up with full sunshine, and notices the intense yellow-green where the sun shines through the leaves, the pale greens and the rich dark greens in the shadows, it seems as if no other color would admit of so varied a scale or be more restful to the eye. Hence for rooms to live in green is preferred. Its healthfulness cannot be doubted if one considers how refreshing the surroundings of trees and grass are to an invalid.

Who Is The Author?

An anonymous and cowardly communication, purporting to be a review of the San Francisco State Building Controversy, signed "Architect," appeared in a recent number of a contemporary. The fact that the unsigned epistle contained a most unprofessional attack upon members of the American Institute of Architects would seem to warrant drastic action by the local Chapter which should demand the identity of the anonymous writer and his subsequent punishment by the Institute.

The publication of the article seems the more difficult to understand when one considers that it appeared in a journal recognized as the official organ of the local Institute Chapter.

And for further inconsistency the belittlement of Mr. Willis Polk for his activity in demanding fair judgment of the State building plans is astounding, when the reader discovers on turning to the Contents page of the same issue, that Mr. Polk is announced as an Associate Editor—a distinction (?) wholly unauthorized and unknown to him.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Mr. Kenneth Macdonald, the San Francisco architect, has moved his office from the Holbrook building to 234 Pine street. Mr. Macdonald recently returned from a lengthy stay in the East, where he is said to have conferred with government officials on housing problems and concrete ship design.

Mr. J. Kondo, a distinguished architect of Japan, is in the United States to study the architecture of the leading cities. Mr. Kondo is especially interested in civic improvements that are being carried out here. While on the Pacific Coast Mr. Kondo is making his headquarters in San Francisco.

Mr. Frank R. Schaefer of Los Angeles is in Washington doing his bit for the government under the Emergency Fleet Corporation. Mr. Schaefer is a member of the architectural firm of Jeffery & Schaefer.

Mr. H. L. Pierce, architect, and Mr. L. C. Leeds are now associated with Mr. Arthur G. Lindley, architectural engineer. The firm name is Lindley, Pierce & Leeds, and the offices are at 310 Hollingsworth building, Los Angeles.

Mr. T. R. Harrold has been appointed county surveyor of Fresno county to fill the vacancy caused by the death of Mr. Scott McKay, who held the office for sixteen years.

Mr. C. E. Troutman, architect of Aberdeen, Wash., is recovering from a capital operation which he recently underwent in a Seattle hospital.

Mr. Joseph Jacobberger represented the Portland (Oregon) Chapter at the recent A. I. A. convention in Philadelphia.

Mr. R. S. Loring, architect of Lewiston, Idaho, is doing his bit in a consulting capacity for the U. S. Shipping Board.

Mr. Charles S. Kaiser, San Francisco architect, has changed his name to Charles Sumner.

Modesto School Additions

Additions to relieve serious congestion, are planned for the various school buildings in Modesto. Mr. J. J. Donovan of Oakland has prepared the specifications.

May Practice Without License

A professional architect may continue the practice of architecture as an unlicensed architect under the new architect's registration law of North Dakota, according to a decision of the supreme court of that state. A Fargo architect was arrested for practicing without a license and the case was dismissed on a demurrer of the lower court. The decision is sustained by the supreme court which holds that the architects' registration law "does not abridge the right of a professional architect to continue the practice of his profession as an unlicensed architect."

Mr. Cahill's Number

Readers of The Architect and Engineer have enjoyed many interesting and scholarly articles by Mr. B. J. S. Cahill, architect, one of the best that he has written in recent years being his description of the Blaney villa in the May number. Most of Mr. Cahill's articles have been more or less eulogistic of his fellow architects and their work. Next month this versatile writer-architect is going to say something about himself—in a modest way, of course, and there will be illustrations of some of his more recent architectural endeavors.

Tubercular Hospital Buildings

Mr. J. E. Stanton, who is in charge of the office of Mr. R. A. Herold, the Sacramento architect, while the latter is in China, will complete plans this month for a group of tubercular hospital buildings to be built at Weimar, five miles from Colfax, Placer county, for the Eleven Counties Association. Buildings costing $85,000 will be constructed this year, to be followed next year with additional units that will bring the total outlay up to approximately $150,000.

State Buildings

On request of the capital issues committee, the erection of the California state building at San Francisco, to cost $1,000,000, and the capitol extension buildings at Sacramento, to cost $3,000,000, will be deferred until after the war. The San Francisco building would require 1000 tons of steel.

The Local Housing Situation

The housing problem will soon be a serious one in California if steps are not taken very shortly to relieve the congested districts near the ship building plants. Oakland, Alameda, South San Francisco, the Potrero, Martinez, Vallejo, and San Pedro are already feeling the need of additional accommodations. Thus far no definite plan to meet these demands has been announced by the government. Mr. George W. Kelham has returned from Washington, where he was called to consult with the Federal officials on housing facilities at Mare Island.

It is known that there has been some correspondence between the government and other California architects relative to working out the housing problem, among them Messrs. Chas. H. Cheney, C. W. Dickey, and W. H. Ratcliff, Jr.

Mr. Arthur G. Scholz Busy

One of the busiest architects in San Francisco is Mr. Arthur G. Scholz, Phelan building. Mr. Scholz has just taken bids for a three-story and basement frame apartment house to be erected on Webster street, San Francisco, at a cost of $16,000. Plans are being completed for a Class "C" brick apartment house on California street, to contain sixteen apartments and estimated to cost $26,000. Mr. Scholz has let a contract to Mr. Fred Miller to construct a two-story store and apartment house, with brick veneer and plaster front, on the State Highway, Menlo Park, for Mr. Chas. Brown. Contract is for $12,500.

A contract has also been let for two flats to be erected on the west side of Gilbert, south of Brannan street, San Francisco, to Mr. Joel Johnson, for $5300.

Miss Julia Morgan Busy

New work in the office of Miss Julia Morgan, San Francisco architect, includes a private garage for Mr. Moore of the Moore Shipbuilding Company, a girls' recreation center at San Pedro for the War Workers' Council, Y. W. C. A., a tubercular hospital near Porterville for Tulare and Kings counties, and alterations to a number of cottages near Bakersfield for hospital purposes for Kern county, California.

Two Heating Contracts

The Gilley Schmid Company, 198 Otis street, San Francisco, has been awarded a contract for installing a hot water heating system in the parochial residence of Holy Cross parish, 1818 Eddy street, San Francisco, and for a low-pressure steam heating plant with oil-burner in the First National Bank building at Fairfield.

Death of Mr. W. Garden Mitchell, A. I. A.

The death of Mr. W. Garden Mitchell, architect of San Francisco, occurred at San Anselmo, his home, the latter part of May, following a short illness of heart trouble.

Mr. Mitchell was a native of Scotland and was 56 years old. He belonged to the old school of architects in San Francisco, and prior to the death of Mr. Albert Pissis was associated with him in designing a number of notable buildings, including the Anglo London Paris National bank and the German Savings bank building. For some time Mr. Mitchell had been practicing independently.

Some of Mr. Mitchell's more recent work is the San Anselmo town hall and Carnegie library. He was the architect of the Christian Science church now under construction in San Rafael. Mr. Carey, of Welch & Carey, San Francisco architects, has kindly volunteered his services in taking care of Mr. Mitchell's unfinished work.

Mr. Mitchell was a fluent writer, and his occasional articles in The Architect and Engineer were always suggestive of high ideals in the practice of the profession. His review of some of the residence work of Messrs. Mead & Requa of San Diego in the March number, was the last and one of his best articles.

The following tribute was published in Mr. Mitchell's home paper, the San Rafael Independent:

> The deceased was a fine character, possessing a good deal of homely dignity and businesslike decisiveness and one after meeting him would always recall him with a sense of pleasure. He possessed the highest ideals of clean strong manhood, and during his short residence in San Anselmo, picked his associates and devoted his energies to the development of the community, whenever the occasion demanded assistance. In his death San Anselmo has lost a good booster and a sterling citizen and upright man.

Mr. Mitchell was a member of San Francisco Chapter, American Institute of Architects.

County Building

The Marin County Supervisors have bought the Sidney Cushing home adjoining the Court House at San Rafael and following the war there will be erected on the site a new county building to house the various officials, including Justice courts, sheriff, Chamber of Commerce and County Jail.

Contract for Heating Plant

The Scott Co., 245 Minna street, San Francisco, have been awarded a contract for approximately $1000 to install a new steam heating plant in the Hotel Abbey on Thirteenth street, Oakland, from plans by Mr. William H. Weeks.

Improving An Entire Block

Mr. William Knowles, architect in the Hearst building, San Francisco, has been commissioned by the Hind Company, owners of the block bounded by Shotwell, Folsom, Eighteenth and Nineteenth streets, to prepare plans for new buildings to be constructed there for manufacturing purposes. A two-story factory has just been completed and a cannery, 200x110, will be started at once. The improvements will also include a power plant which will supply all tenants in the block with steam power and water service.

Boom for South San Francisco

South San Francisco is seeing quite a little building activity due to its close proximity to the shipyards. Among the architects in that section who are finding plenty to do is Mr. W. L. Schmolle, who has let contracts for a $35,000 workingmen's hotel for Mr. Frank S. Fusco and has completed plans for a three-story frame apartment house, 140x50, for Mr. G. S. Walker. The building will contain twenty-four apartments and will cost $55,000.

Rice Mill for Sacramento

The Pacific Rice Growers' Association will spend $250,000 in building and equipping a new mill in West Sacramento. The plans have been prepared by a Louisiana architect. The owners are being represented by Mr. Joseph Stevens of the Fort Sutter Bank, Sacramento. The main building is to be five stories and probably will be constructed of reinforced concrete. There will also be two warehouses. The plant will have a capacity of 10,000 sacks per day.

Rice Mill and Warehouse

Engineer Omer Denny of San Francisco has prepared plans and a contract has been let to the Clinton Construction Company for a four-story concrete rice mill and a two-story concrete warehouse to be erected in the Islais Creek District, San Francisco, for the Rosenberg Bros. Co. There will also be an elevator 70 feet high. The improvements will cost $250,000.

New Bandstand

Plans have been completed by Messrs. Reed & Corlett, the Oakland architects, for a new granite bandstand to be erected in Lakeside Park, Oakland. For the present, however, only a portion of the stand will be built.

Oakland Boulevard Residence

A two-story frame and stucco residence will be built in the vicinity of the Oakland boulevard by Mr. J. Voss, from plans just completed by Mr. W. E. Millwain, Albany building, Oakland.

Mr. Pennell Congratulated

Mr. Joseph Pennell has received congratulations on his lithographs of War Work in America from two most important sources — one, President Wilson, writes him: "They (the lithographs) are remarkably interesting and remarkably fine." And the other from the French Ambassador in Washington, M. Jusserand, who has informed Mr. Pennell that the French Government proposes to show a set of these prints in the Luxembourg.

These are the lithographs which the United States Government authorized Mr. Pennell to make and which have been published under the title of "War Work in America" by the Messrs. J. B. Lippincott Company.

Merced School Litigation

Settlement of the long pending site controversy in the Merced Union High School district, now in the courts, has been indefinitely postponed on account of the illness of Judge Ogden of Oakland, who heard the case. Bonds to the amount of $150,000 for the erection of the building were voted in 1916. Messrs. Allison & Allison of Los Angeles are the architects for the school.

St. Francis Wood Residence

Miss Gertrude Comfort, in charge of the architectural work of the Mason-McDuffie Co., 278 Post street, San Francisco, is preparing plans for a Colonial house having eight rooms and two baths, and to be built in St. Francis Wood for Mr. Robert Mason. The house will cost approximately $8,500. There will be a garage.

Frame Residences

Messrs. Morrow & Garren, Chronicle building, San Francisco, have prepared plans for a two-story and basement residence to be built on Thirty-sixth avenue in the Richmond District, San Francisco, for Mr. B. Getz, also a two-story frame and stucco dwelling on Thirty-ninth avenue, Richmond District, for Mr. W. I. Garren.

Big Garage Planned

Mr. James H. Humphreys, architect for the Wells Fargo Company, is preparing plans for a three-story reinforced concrete garage, 112½x194½, on the southeast corner of Folsom and Hawthorne streets, San Francisco. The entire building will be occupied by the express company for its wagons and automobiles.

Country Home of Concrete

Plans are being prepared by Mr. Henry Shermund, Mills building, San Francisco, for a $25,000 country home and garage to be built for a client near Sacramento.

Government Attitude Toward Building.

Editor The Architect and Engineer:

Many confusing, if not misleading, statements have appeared in the press recently with respect to the Government's attitude toward building operations in general.

For your information there is attached copy of letter written by W. G. McAdoo, Secretary of the Treasury, to Senator Calder and referring to some remarks which the Senator made before one of the Senate sessions May 9, 1918.

That Senator Calder also was under some misapprehension as to the Government's attitude toward building operations is evidenced from the exception taken to Senator Calder's remarks by Mr. McAdoo, as shown in the attached copy of letter, which appeared in the Congressional Record, May 17, 1918.

Many of your readers would no doubt like to be correctly informed.

Yours truly,
H. Colin Campbell,
Director, Editorial Bureau.

The Secretary of the Treasury,
Washington, May 11, 1918.

Dear Senator Calder:

From the proceedings of the Senate of May 9, 1918, Congressional Record, page 6755, you are quoted as saying:

"At no time in the history of New York have we needed more than at present new buildings for people to live in. We are prevented from having them to some extent because of the attitude of the Treasury Department in advising the banks and mortgage companies against loaning money upon mortgages on real estate. If the Treasury Department changed its attitude, the money could be obtained, new building would be encouraged, and we might then be able to help the housing problem we are facing here."

This statement is so wholly without foundation that I am amazed that you would make it. The Treasury Department has at no time taken any such attitude, nor has it ever advised banks or mortgage companies against loaning money upon mortgages on real estate.

I have advised against the construction of unnecessary buildings during the period of the war, but I have laid emphasis upon unnecessary building. I have stated publicly that—

"Where it is a question of need—be it on account of sanitary conditions or because without such new construction other operations essential at this time for the welfare of the country would suffer—there is no doubt that the work should be undertaken. This applies equally to construction work in cities and towns and in farming districts."

In a letter to Mr. Gompers, dated March 15, 1918, in reply to a resolution adopted by the Building Trades Council of San Francisco, I said:

"Building operations which are not required to protect the health or provide for the comfortable needs of our people or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war should be postponed." I enclose a copy of that letter also.

The attitude of the Treasury Department has been that capital which is needed during the period of the war should not be employed in the construction of unnecessary buildings at this time. But there has never been any suggestion that buildings actually needed for the health and protection of the civil population or for the conduct of essential business of the country should not be constructed during the period of the war.

I hope that you will correct your erroneous statement by the inclusion of this letter in the proceedings of the Senate.

Faithfully yours,
W. G. McAdoo.

Oakland's Housing Problem

Mr. C. W. Dickey, Oakland architect and member of the Chamber of Commerce, who has gone thoroughly into the proposition of housing, thinks Oakland is on the verge of a house famine. He says:

Three thousand men employed in Oakland are forced to live elsewhere; add to this the 11,000 estimated additional men that will be required by January 1, and we have a total of 14,000 men, at least 50 per cent of whom will want to live near their work. How can 7,000 men and their families be accommodated in 1,615 houses?

Last year about one-third only as many houses were constructed as in 1910, while the record for the present year is lower than last year's record for the same period.

If housing conditions are better at other points than in Oakland, the men will go there.

Private capital cannot be relied upon to provide the houses required.

This problem should be met by the organization of a strong housing company, composed of representative men and subscribed to by the business interests generally.

The actual cash required from the stockholders will not exceed 30 per cent of the total cost of land and improvements, and at least 50 per cent can be borrowed from the banks.

Thus, if houses and lots average $3,000, the cash required from the stockholders for each house would be about $900.

Houses thus provided should be located within easy access of the shipyards and factories, should be of various types, some for renting and some for selling on easy terms, and designed to meet the needs of all classes of labor, from the man receiving $15 a week to the man getting $40 a week.

Single men could be provided for in hotels built and equipped on the principle of the famous Mills Houses in New York.

Such a hotel should be near the center of the city. It should contain about 500 rooms and would cost about $350,000, exclusive of the land. The rooms should be small but comfortable, with centrally located toilets and baths, large, homelike lounging, reading and writing rooms with restaurant, barber shop and news and tobacco stand.

Both enterprises should be run on a specified dividend basis, the profits being limited to seven per cent.

Business interests generally are deeply concerned over the problem and such a plan as outlined by Mr. Dickey will possibly be the outcome of the present situation.

Bay Point Cottages

Mr. W. A. Doctor, architect of Martinez, has completed plans for eight cottages to be built at Bay Point for the Coos Bay Lumber Company of Oakland. About forty of these houses are to be constructed and they will be built in groups of eight or ten. Each house will contain from four to six rooms and will cost $2500.

Moving Picture Studios

Moving picture studios are to be built in the Piedmont hills and in San Rafael by Mr. Norman Manning and his associates. Mr. Manning was until recently managing director of the Pathe Film Co. The following San Francisco business men and capitalists are interested in Mr. Manning's new enterprise: Messrs. Paul T. Carroll, Alexander Morrison, A. L. Meyerstein, J. M. Hotchkiss, Col. A. F. Andrews, and John R. Wilson.

Result of First Stage of State Building Competition

The first stage of the competition for State buildings to be erected in Sacramento at a cost of $3,000,000 (upon conclusion of the war) has resulted in the selection of the following eight architects, who will compete in the final stage of the competition, to be concluded September 15:

Weeks & Day, San Francisco.
Ward & Blohme, San Francisco.
Bliss & Faville, San Francisco.
Adolf Scherrer, Indianapolis.
James Gamble Rogers, New York.
Dennison & Hirons, New York.
Tracy & Swartwout, New York.
W. D. Hewitt, Percy Ash and N. C. Curtis, associated, Philadelphia.

Each of the above firms, besides being given an opportunity to compete for the final prize, will receive $2,500 for their efforts.

The jury of award was composed of Messrs. Henry Bacon and William M. Kendall, architects, of New York; Sylvan Schnaittacher of San Francisco; Governor W. D. Stephens; Chairman Marshall DeMotte of the State Board of Control; State Librarian Milton Ferguson; Chief Justice F. M. Angellotti, and George B. McDougall, State Architect, the latter acting as architectural advisor.

Interest in the competition has been nation-wide. The records of the State Architect's office show that approximately 359 architects requested information on the subject. Of this number 263 inquiries came from Eastern States and ninety-six from California. The total number of plans judged was eighty-four.

Improvements to Business Houses

A demand for more room will shortly be relieved by two leading San Francisco mercantile houses. The White House is to build an additional story, from plans by Mr. Morris Bruce, and H. Liebes & Company will have increased accommodations from plans by Mr. William Mooser.

English Residence

Mr. S. Heiman, 212 Stockton street, San Francisco, is preparing plans for a one and one-half story English type bungalow, to cost $7500 and to be built in Forest Hill Extension, also a two-story frame residence for a client in Claremont Court, San Francisco, to cost $5000.

Eureka M. E. Church

Plans have been completed by Mr. W. J. Wythe for a one-story addition, 60x70, together with alterations, to the Eureka Methodist Episcopal church, the improvements to cost $15,000.

Housing Plans

Plans for housing the employees of the Pacific Coast Shipbuilding Company, which is completing a large plant near Bay Point, Contra Costa county, have been prepared by Mr. G. A. Applegarth, Claus Spreckels building, San Francisco. The drawings have been sent to Washington for approval of government officials.

Residence Alterations

Plans have been drawn by Mr. August Nordin, San Francisco architect, for a number of alterations to the residence on Seacliff avenue, San Francisco, of Mr. W. A. Halsted. Mr. Nordin has also completed plans for altering a two-story frame dwelling on O'Farrell street into modern apartments.

May Rebuild Country Home

Mr. George E. Forderer's country home at Woodside, near Redwood City, which was recently destroyed by fire, will probably be rebuilt, but possibly not until after the war. Mr. Forderer's loss amounted to between $20,000 and $30,000.

Warehouse and Factory

The California Packing Corporation will build a two-story reinforced concrete warehouse, 90x100, and a one-story concrete manufacturing building, 25x75, at First and Myrtle streets, Oakland, from plans by Mr. Philip Bush, C. E. The improvements will cost $40,000.

Contract for Church Alterations

Mr. Harvey A. Klyce, Call-Post building, San Francisco, has been awarded a contract for the carpentry work in connection with the completion of the interior work to St. Francis Church on Vallejo street, San Francisco. The plans were drawn by Mr. Chas. J. I. Devlin.

Building New Factory

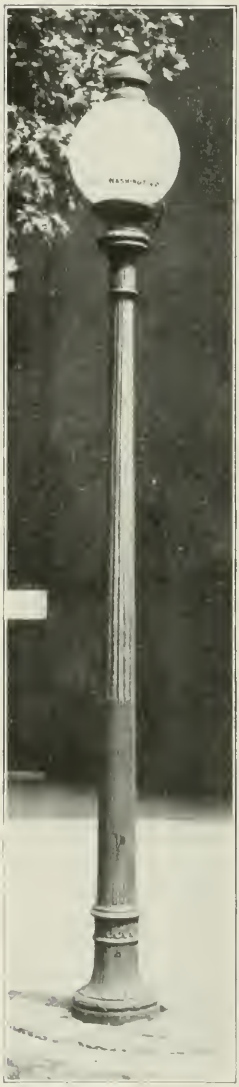
According to the Modesto Herald, the Mineral Products Company at Patterson, near Modesto, is building a new factory with approximately 70,000 feet of floor space and which will cost with equipment in excess of $200,000. Mr. R. J. Wyseur is superintendent.

Hospital for Hercules Employees

Plans have been prepared by Mr. J. T. Narbett, architect of Richmond, who is in charge of construction work at Hercules for the Hercules Powder Co., for a hospital building for employees of the concern.

Big Concrete Drydock

An immense concrete drydock has been designed by Mr. Howard C. Holmes, C. E., of San Francisco, for the Moore Shipbuilding Company of Oakland. The structure will cost in the neighborhood of $1,000,000.



Well designed gas lamp with street names on globe used in Washington, D. C.

Street Lighting and City Planning

By CHARLES T. PHILLIPS, C. E.*

WHILE the functions of a city planning body are many and the various phases of their duties have been discussed at length many times, the subject of street lighting seems to have been neglected. This seeming neglect is due not to any lack of importance of proper street lighting, but rather to the fact that we have always had street lighting and consequently the glitter of its newness has worn off. Tenement house regulation, zoning, etc., however, have all the attractiveness that their novelty, as a city governmental feature, can give them.

Street lighting performs several duties—first, as a police function, it being a well-known fact that criminals shun the light. Theodore Roosevelt, when Police Commissioner of New York City, is quoted as having said that "one street lamp is equal to one policeman." The second duty that street lighting has to perform is to assist pedestrian and vehicle traffic, and still another is the use of accentuated lighting in certain districts with the object of attracting the crowd for the benefit of the merchant, cafes, theaters, etc.

Since the birth of electricity, street lighting has grown, from a crude attempt, into an art as well as an exact science, and a successful treatment of it combines science and art. Without artistic treatment, street lighting is not attractive, and without applied science it is not economical. The aesthetic features of a system should be carefully considered by the city planning body, but, unless the organization has as a member an illuminating engineer, their criticism should not extend further than that portion of the street lighting that is seen by the public, such as posts for supporting lamps and the power house or sub-station from which the lights are controlled.

One of the functions of a city planning commission is to consider the artistic detail of any structure that may be erected by the city or on city property, so that there will be artistic harmony rather than hideous buildings, electroliers, etc., that are seen so frequently in or on the streets of our cities, especially in the smaller towns.

In order to assist in obtaining efficiency in street lighting, the city planning commission should see that there are as few obstructions to the distribution of light rays as possible. Trees on the street present the greatest menace to good distribution of light, while poles carrying light, trolley and telephone wires, etc., are next. Ordinances

*Pacific Building, San Francisco.

should be passed providing that trees should have their branches trimmed in a uniform manner, and the number of poles on the streets should be kept down to a minimum. An otherwise attractive and well-lighted street is frequently spoiled by untrimmed trees and an unnecessary number of poles, posts, wires, railings, etc.

While the illuminating engineer should be given a free hand in designing all details of a system of street lighting as well as in the selection of the kind and type of lamp to use, the height of the lamps from the street surface, the kind of wires, conduits, etc., used, and the spacing and location of the lights on the streets, he should consult with the city planning body with reference to the artistic features of the electroliers, poles, power house, etc. In selecting an electrolier for street lighting, the advice of a reputable architect should be taken and a city official or a member of some civic association should not consider himself capable of making the selection any more than when plans are being prepared for a city hall or other prominent structure.

A lantern, mounted on the top of a lighting post or suspended, where overhead wires are used, is the best device for supporting the lamp. It has many points of advantage over the usual form of round or pear-shaped globe so commonly seen. Fig. 3, on the next page, shows an electrolier designed by McKim, Mead & White, architects, and erected in the streets of New York City.

Fig. 4 shows the electrolier used in connection with the new street lighting system of Cleveland.

An example of the difficulties of city councils and planning commissions in making people understand about lighting systems is found in the Claremont district of Berkeley. Two years ago proceedings were started to give this neighborhood, which is the finest residence district of the city, a modern single lamp standard electric lighting service, with underground cable connections.

Some of the people residing there could not understand how it could be done at reasonable cost and these, together with the usual objectors to all improvements, raised the cry that it would cost from seventy-five cents to one dollar per front foot, if not more.

The City Council finally agreed to take bids and not to consider any over thirty cents per front foot. The contract was finally let for approximately twenty-seven cents.

Today this district is well lighted and the residents, even some of the strongest objectors originally, express themselves as well pleased.

Well designed electrolier as used in streets of Baltimore.

If city councils gave in to all misunderstandings and objections raised, we would have no progress.

The Tenth National Conference on City Planning at St. Louis, Mo.

(Continued from page 101)

Plan Committee of New York City. Dr. Whitten's paper, while mostly from the point of view of large cities of a half million population or more, had many points that are applicable to all cities. He said in part:

"This general problem of protecting the residential sections from mutually antagonistic types of residence use and of preventing congestion of population may be approached in four ways:

"1. Direct limitation of the type of dwelling.

"2. Limitation of the percentage of lot that may be covered and size of courts and yards.

"3. Limitation of number of houses or families per acre.

"4. Requirement of a certain minimum land area for each family housed.

"Limitation of the number of houses or families per acre. In England, under the Town Planning Act, the number of houses or buildings per acre may be limited. Though houses or buildings rather than families are referred to in the act, it is apparently being administered as substantially to secure the limitation of the number of families per acre. Though existing statutes authorizing zoning have apparently not been drawn with a view to the limitation of the number of families per acre, it is possible that they might be construed to permit that method of zoning.

"Requirement of a certain minimum land area for each family housed. This method is intended to accomplish the same result and is in reality merely another way of stating the method just considered, i. e., limiting the number of families per acre. It would require a certain minimum area of lot for each dwelling or for each apartment in case of a multi-family dwelling. Thus there might be a zone in which a minimum of 5,000 square feet of land area per family would be required. This would mean the equivalent of a lot 50x100 feet for each family housed.

"I believe that this plan of requiring a minimum land area per family can be carried out under those statutes that have been passed authorizing zoning in the various States that have followed the general terms of the New York Charter of 1916. Future statutes, however, should include this power specifically, so there will be no doubt as to the legislative intent. Any residence zone plan that is based directly and consistently on the prevention of congestion of population is based on a purpose which the courts can scarcely fail to recognize as being within the plain scope of the police power."

Fig. 3

Fig. 4

Frederick Law Olmsted, president of the Conference, told of the importance with which city planning had been accepted by the National Government as a necessary part of the construction of the new cantonments, and in the laying out of suburbs and villages for housing industrial and shipbuilding employees. More than thirty skilled members of the National Conference on City Planning were actually doing Government service and more were expected to be required within a short time.

INDUSTRIAL HOUSING IN WARTIME.

He told how the Government has undertaken the task of erecting housing facilities for the men at many of the shipyards in different parts of the United States. Congress has appropriated $50,000,000 for the use of the Shipping Board in housing and $60,000,000 to the Department of Labor for providing for the general industrial workers, particularly at munition plants. Ten million dollars of this latter sum must be used in the District of Columbia, as Washington is now very seriously overcongested with the great numbers of new Government employees necessary to carry on the work of the different war boards and activities.

The Disappearance of Wall Paper

IN the last few years the art of interior decoration has undergone great changes. With the advancement in home sanitation and improved housing conditions there has developed an increasing demand for more artistic and harmonious effects and at the same time more sanitary conditions in the decoration of the home. As a result, the use of wall paper has been steadily decreasing and discriminating home builders have turned more and more to the use of the new and artistic flat wall paints for purposes of interior decoration. The beautiful effects which they produce and their sanitary qualities have given them a popularity which stamps them as the wall covering of the future. Knowing the unsuitability of wall paper for purposes of home decoration, both from an artistic and sanitary standpoint, its passing from popular favor can be viewed only with the greatest satisfaction.

Interior decorators have long contended that for the most artistic results a flat painted background was far superior to that produced by the most expensive papers. Its rich, velvet-like texture is unmarred by laps or lines. Its complete lack of inharmonious patterns and clashing colors gives it the true artistic quality of displaying to the best possible advantage every detail of the furnishings. There is something about the flat painted interior with its warm colorings and blending tones that creates an atmosphere of refined elegance unattainable in any other way.

The flat wall paints now obtainable afford immense variety of shades and tints from which to choose. Delicate French grays, light buffs, cream tints and ivory whites for the bedrooms, rich browns, blues and greens for the dining-room and living-room, provide an almost endless variety of pleasing combinations to harmonize with any desired color scheme. On the border or on the body of the walls attractive stencil designs, which bring out in relief the color combinations, may be applied. With them can be produced many effects unobtainable with wall papers. The use of flat wall paints is not limited to new work, but is equally as effective on old unpapered surfaces or those from which old paper has been scraped.

Aside from its inartistic qualities, undoubtedly the principal reason for the decreasing use of wall papers is the growing realization of their insanitary characteristics. There is, in fact, abundant evidence that wall papers are a distinct menace to health. The bacilli of infectious and epidemic diseases find a ready culture medium in the porous, absorbent surface of wall paper and in its backing of organic paste proof surface which permits of washing and is impervious to dampness and resists decay. On their hard, non-absorbent surface there is not the slightest foothold for dust or germs. Through the use of flat wall paints for interior decoration every surface in the home—floors, walls and ceilings—may be fully exposed to the purifying effects of light, air and sunshine. For kitchens and baths sanitary gloss paint is preferable, as it is even more easily cleaned.

House Problem Competition

Architects are invited to participate in a competition to solve the small house problem, same to be conducted by the Journal of the American Institute of Architects and the Ladies Home Journal. The latter will publish the winning solutions. Five prizes, of $1,000, $500, $250, $150 and $100, will be offered.

All treatises and plans must be sent prepaid to the office of the Journal of the American Institute of Architects, The Octagon, Washington, D. C., on or before October 31, 1918. No submissions will be accepted unless the requirements as to the three parts are fully complied with. A detailed programme will be sent on receipt of request.

The jury will be as follows: Thomas R. Kimball, president of the American Institute of Architects, chairman; Louis F. Post, assistant secretary, Department of Labor, Washington, D. C.; Thomas Adams, town planning advisor, Commission on Conservation, Ottawa, Canada; Herbert Quick, Farm Loan Board, Washington; Lawson Purdy, chairman Committee on New Industrial Towns, New York City; James Sullivan, representative of the American Federation of Labor on the Council of National Defense, Washington, D. C.; Edith Elmer Wood, legislative authority, Philadelphia; Frederick L. Ackerman, architect, New York City; Milton B. Medary, Jr., architect, Philadelphia.

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Lack of Architectural Criticism

(From the Southern Architect.)

AN old saying says that where there is no opposition there is no interest pro or con. And in the United States the total absence of constructive architectural public criticism is exceeded only by the lack of public interest in architecture.

The editor firmly is of the opinion that the latter condition is strictly an outgrowth of the former. There has never been in American architectural history, any vital consistent, constructive public criticism of architectural productions, either in the large or in details. Criticism, such as it is, is restricted entirely to the architectural schools.

The net result has been to make architecture one of the "weak sisters" of the arts; implying, as the lack of criticism does, the inability of architecture to withstand public criticism.

All the other arts—drama, painting, sculpture, literature, music—have their vital and pointed critics; works produced by followers of any of these arts cannot go unscathed for long if of poor quality or seriously erring. And where praise is to be bestowed it is bestowed liberally and public recognition is given by acclaim.

Do we have happenings of this kind in architecture? Yes—semi-occasionally, as in the case of the Woolworth building, which captured the imagination of Americans by the thing which most captivates Americans—size, bulk, biggest!

But of constructive, educative criticism, aimed at architect and owner equally, we find none; and in architectural journals, where one would expect to find at least a page or so devoted to criticism directed in a technical sense for the benefit of architects, we find nothing resembling it. Such criticism as we find is most of the sort that might be classed as "appreciations." The Architectural Review of Boston has the nearest thing to real criticism, but which falls completely short of the kind that is here bespoken for, in its monthly critique of architectural magazines, commenting on the articles and pictures in each magazine, often interspersed with some brief criticisms of a suggestive value.

Why this absence of criticism?

The editor has often wondered whether the art was considered so very difficult that none of its products could approximate perfection; that the practical conditions under which works of architecture are produced are so involved, that all criticism would be unfair and hence is avoided by would-be critics, except in the schools where criticisms might be said to be sub-rosa.

But, granting the great difficulties involved in the practice of architecture, in modern times—in all times for that matter—this is not a sufficient reason, if it be a reason advanced by any one, for avoiding criticising architectural works, by professionally competent critics.

Criticism of the architecture of dead-and-gone times is common enough, but as to words of criticism on modern phases, or modern problems, there is little or none. One would look, at least, for something of the kind in the books on architecture, where, one might say, an author would have freer scope and less fear of "hurting somebody's feelings"; but even in the books, where they touch upon modern architecture they do so very lightly, give very few pages to the subject, and no criticism beyond bare comment on tendencies. This may be found to be the case in practically any book on architecture which one may pick up—Heathcote Statham's being a possible exception—and so the quest for real, vital, constructive modern architectural criticism comes to an end. Its very paucity forces the question, Why so little?

Cheap Concrete Ships

If concrete ships are to compete successfully with wooden ships of 5,000 tons or less capacity, it will be necessary to design forms that can be repeatedly used. The 5,000-ton concrete ship "Faith" required 2,000,000 ft. B. M. for its forms; and the builders have said that only 10 per cent of this lumber can be used again on a similar ship. If so, the only advantage that a concrete ship would have over a wooden ship of 5,000 tons would be the advantage of durability, which has yet to be established.

It is evident, then, that the economic construction of concrete ships depends largely upon the design of forms that can be repeatedly used. This seems to point toward the use of steel forms.—Engineering & Contracting.

Steel Frame Building Erected at Rate of 1 Floor Every 2¼ Days

In the construction of the steel frame for the Statler Hotel at St. Louis, Mo., last year steel erection proceeded at the rate of two floors every 4½ days. The building is 150x130 feet, 20 stories high and contains 4500 tons of steel, 700 tons of which were used in the basement. A 10-hour shift was worked for the first few weeks. The steel erection was done with two 12-ton guyed derricks each having a 150-ft. steel mast and 90-ft. steel boom, and each served by a 200 H. P. Thomas electric hoist. The derricks were specially designed for the work and were built by the Minneapolis Steel & Machinery Co. for the International Steel Erection Co., Waukesha, Wis., the contractors for the erection of the steel work.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Wrecking a Concrete Building With an Iron Ball*

POUNDING a reinforced concrete building to pieces with a 1200-pound iron ball was the novel method employed when the Western Newspaper Union building was razed to make way for the head house of the new Chicago Union Station. The building destroyed was an eight-story structure covering an area of approximately 107 feet by 120 feet. It was erected in 1909, and was unusually strong, the designing live loads being 250 pounds and 300 pounds per square foot. A test of the building made before the wrecking was begun showed it to be still in excellent condition, the floors during this test withstanding a load of approximately 910 pounds of pig iron per square foot.

The lower five floors of the building were a four-way flat slab construction, the others being of flat slabs alone, the thickness of the slabs being $8\frac{1}{2}$ inches and the beams 16 inches by 24 inches. The concrete in the slab consisted of 1 cement, 2 sand, and 4 pebbles. The width of the octagonal column caps was 4 feet 6 inches. The short diameter of the columns was 24 inches the core being 21 inches. The reinforcing in the four-way flat slab consisted of fifteen $\frac{5}{8}$-inch round high carbon steel rods in each band, the width of the bands being 7 feet. In the columns the reinforcement consisted of $8\frac{1}{2}$-inch round rods, $\frac{3}{8}$-inch round spiral, $2\frac{1}{2}$-inch pitch.

In order to facilitate the wrecking, as well as to economize in the amount of manual labor required to demolish the building, the W. J. Neuman Wrecking Company, Chicago, used a 1,200-pound ball. A wrecking outfit that would operate between the columns of the building was constructed, and consisted of a stiff-leg derrick and 40-foot boom, mounted on a 16-inch by 24-inch platform with rollers, the ball, or "skull crusher," being carried on a single fall line. A 25 horsepower Thomas direct current electric hoist furnished the power for hoisting and swinging. The job of hoisting the various parts to the roof of the building and assembling them required several days.

The method employed in using the ball was to drop it through a distance of approximately 40 feet on the central parts of a slab. This had the effect of shattering the concrete up to the column capitals, or to the edges of the beams. The reinforcing bars were then cut by means of an oxy-acetylene torch. The ball was next directed over the centre of the column, the blows in this instance resulting in breaking the concrete away from the rods at the base of the columns on the next lower floor to a height of 4 feet or 5 feet. As much of the column concrete as possible was broken off in this way, after which a fire was maintained around the column base for a number of hours and then water thrown on the column. This operation caused the concrete to crack and weaken the column. Then, when the reinforcement had been cut with the oxy-acetylene flame, it was an easy matter to pull the standing mass over with a block and tackle attached to the electric hoist. The beams were brought down with the columns, and the ball was used to break up pieces of concrete too large to be loaded for hauling away. The brick walls not backed by concrete were easily knocked over by swinging the ball against them.

Of 65 men employed in wrecking the building only four were required to operate the iron ball. Ten weeks were required to raze the building, the work proceeding at the rate of a floor a week, with two weeks for the heavy construction of the basement. The total cost of demolishing the building without taking into consideration the question of salvage, was approximately $20,000, or about 15 per cent of the original cost of the building. This compares well with 10 per cent on the wrecking of other reinforced concrete buildings, the difference being due to the present high cost of labor.—Concrete.

*Wrecking a building by means of an iron ball is not a new method in San Francisco. It will be recalled that the old Chronicle building was wrecked after the fire by means of a pile driver hammer weighing approximately 2400 pounds. Other buildings in San Francisco have received similar treatment with very satisfactory results.

The Building Situation

"Present-day building construction no doubt represents to a greater degree than ever before imperative work—housing for war workers, factories for war material and supplies, schools for children in new industrial towns, theatres, necessary to keep workmen contentedly at their jobs, etc.," says the American Contractor, Chicago.

"The April building, as indicated by the permits issued in the principal cities, shows expansion, and this means, therefore, that essential construction work is increasing. This necessary work, one of the main auxiliaries in winning the war,

will probably continue to expand, for construction work has been seriously neglected on account of alleged high costs for perhaps two years. The resources of the country have increased enormously since the summer of 1914, but buildings have not kept pace and the dearth has now become so great in many places that increased rents and privations of various kinds are entailing a multifold distress."

What Is a Carpenter?

PROF. N. B. GARVER, in a paper read before the Western Society of Engineers, related some of the human interest incidents that marked the examination of applicants for positions as carpenters in army cantonment work:

All classes were present and most of them claimed to be carpenters. If a collection were made of all obsolete, rusted out and worn out tools brought to the camp site the collector would have a good start in the junk business.

Most of the men belonged to the class called "floaters." Some of them were good mechanics; most of them were very ordinary workmen. If a man showed even ordinary ability and had any energy whatsoever, he was retained. The work was to be done and if good workmen could not be secured the poor must be endured. The word "economy" does not appear in the war dictionary.

The following incidents are related to indicate the character and skill of the workmen: A carpenter (?) was seen crawling around on his hands and knees on the second floor joists. He was afraid to stand for fear he would fall.

A carpenter (?) distributed wainscoting along the outside of the building and thought it was drop siding.

Foreman Deggs said to a new carpenter as he came on the job, "Are you a mechanic?" "No," was the reply, "I am an Italian."

Foreman Price told a new carpenter to get out on the scaffold and help put on siding. The carpenter asked, "What tools will I need?" Price's reply was, "I don't know what tools you need, but I generally use a pick and shovel."

A laborer was discharged because his services were of no value. He went to another part of the camp and secured employment as a carpenter. In a few days he was advanced to the position of subforeman. He evidently had missed his calling in the first instance.

Attention was attracted to a certain carpenter foreman because he was advancing laborers to the rank of carpenters. Upon investigation it was discovered that he was getting a "bonus" of five dollars a week from each man thus advanced.

The foreman of a gang of about 20 carpenters refused to have his gang divided. His method of protest was to sit down and do nothing. He and those of his men who refused to work were promptly discharged.

Men who began work as carpenters often were reduced to laborers.

Labor conditions on such work surely are not what might be desired, but the work must be done, and with the class of labor available.

The Courage of France

WHEN the biggest war in the world's history was launched by the German military machine, France had embarked upon the preliminaries of one of the greatest engineering feats ever attempted.

On the shores of the Mediterranean is the busy city of Marseilles. It lies near the mouth of the Rhone river, a great inland waterway. In order to dock at Marseilles river barges making the Rhone trip were compelled to venture out into the open Mediterranean, always a dangerous feat for river craft of light draft.

The French had, as far back as Napoleon's day, planned to connect at some period the outlet of the Rhone with parallel canals, running to Marseilles. The great engineering obstacle to this plan lay in the ring of hills which fringe the city of Marseilles.

Shortly before the war began, French engineers planned to construct not only the canal, including a canal tunnel through the hills, but an elaborate system of breakwaters and the dredging of a basin for shipping protection at Marseilles.

The city of Marseilles did not permit the stress of war to interfere with this project. Marseilles kept on with the work. The canal tunnel is one of the most remarkable in the world. It is not only seven miles long, but it is the widest tunnel in the world. As the war advanced and the call for manpower increased, Marseilles found it necessary to employ German prisoners upon the work.

It is a startling commentary upon the German viewpoint that the prisoners so employed accepted the situation with equanimity, remarking that it was well to finish the work, because it would be all ready for Germany when she came to seize it and make it efficient.

The tunnel has been driven and is ready. The channel will not be dug until after the war.

The remarkable fact, however, is that a nation, so torn and desolated as France, could, in her hour of supreme effort, find time and enterprise to continue this great engineering work. If France, seeing the necessity of such work, could carry it through, how much more important is it that America, with her great man-power, should continue necessary public construction during the period of the war?—Exchange.

Public Appreciation of Good Architecture

THE architect who is capable of rendering to his clients the fullest measure of service has two distinct attributes. He must have a native appreciation of beauty and harmony in form and color—and he must be a keen business man, capable of exercising discriminating judgment in the expenditure of money entrusted to his care—protecting his client against financial snares and pitfalls that might bring disaster.

He must have an unerring artistic sense that will instinctively cause him to avoid incongruities that would mar the harmonious lines of the completed building. He must have vision so that he may project clearly before his mental sight the completed structure he is planning, and sense accurately the impression that the building, taken as a whole, will convey to the auditors.

He must know just where to place a window so that it will bear its true relationship to the remainder of the building. He must work out with painstaking care the many details of construction which, all taken together, create upon the beholder a pleasing sensation of beauty and harmony, although the separate details that combine into the harmonious whole escape attention.

In his artistic enthusiasm, however, he must not forget the practical utilities of the building. This window must not be so placed that it will prevent a satisfactory arrangement of the furniture in the room; the building must be proof against extremes of heat and cold; the heating plant must be adequate to the task, and yet it must not be wasteful of fuel. Lighting, ventilation, convenience of interior arrangement—all of these essentials to successful architecture must be dealt with in a severely practical manner.

It is a rather strange fact that the public of today has an inadequate idea of the part that the architect plays in the construction of a building. The average man builds once in a lifetime. He doesn't think much about architecture—takes it as a matter of course, like the weather report or the annual migration of robins—until his appointed time comes to build. Then his first instinctive thought, one that he seldom puts into words, goes something like this:

"I know about what kind of a building I want. The contractor is the man who will build it for me. The architect? Oh, he's the man who checks up on my ideas as to what kind of house I want. He probably won't agree with me anyway, and maybe he'll try to shove across a lot of new-fangled ideas I don't want. The only really useful purpose he serves, as nearly as I can find out, is to check up on the contractor, and as I know I am capable of doing that myself, why should I employ an architect?"

The architect is a sort of fifth wheel on the wagon according to this reasoning—his services are ornamental, useful perhaps, but not wholly necessary.

So the inexperienced owner, cheerfully confident that he is competent to meet the situation, unaware of the pitfalls confronting him, often plunges in and wallows through a sea of trouble, and in the end he is a much wiser, and ofttimes a sadder, individual. The average man does not like to advertise his mistakes, so the owner does not proclaim his error in having failed to employ an architect, and there are few who profit by his misadventures.

A contractor has a definite mission to perform. His duties are not at all those of an architect. Neither by training nor experience is he fitted to do an architect's work, and an owner should not expect the contractor to fulfill an architect's tasks.

What is needed in America is public appreciation of good architecture—education in the essentials of good architecture.

Architecture — the construction of buildings—is interwoven in the life of the human race. Indeed, there are few creatures, no matter how low in the scale of life, that do not construct some kind of a shelter against the elements and their enemies. Some of these structures show engineering skill and beauty of

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form of no mean order. With his first glimmer of intelligence the lowest savage turns his thoughts to shelter against the rain and the sun and the wandering enemies that may beset him. Just a little higher in the scale of life he turns his attention to beautifying this shelter, to expressing in its construction his first rude, almost instinctive, craving for the expression of his appreciation of harmony.

Why then, should modern man take no interest in the structures that form so essential a part of his life from the cradle to the grave? Ought not children to be given an elementary training in the essentials of good architecture? An elementary instruction of that kind would require very little of the child's school life, and would undoubtedly have a great cultural value that would influence the child's future life.

In later years when the child of today becomes the owner for whom a house, a store, a factory is built, a little elementary instruction in architecture—and in the solid returns that good architecture brings to the community and the individual—would undoubtedly bear fruit. —Improvement Bulletin.

Hospital Construction Today

A southern architect has sent the following query to the editor of Modern Hospital whose reply will be found of interest to Pacific Coast architects:

We have plans in our office for the construction of a reinforced concrete hospital building, the erection of which is being held up by the building committee, who think that by deferring the erection for a while they will be able to let the contract for less money than they can at this time.

As we want to give our clients the best information obtainable, and the best advice that we can, we are writing to ask you, as being in a position to give us an intelligent and unbiased opinion, to reply to the following questions:

1. Do you think it advisable to build now, or to defer building for a while?
2. Whether you think it wise to wait or to build, will you please state your reasons for your opinion?
3. How long do you think the present prices will be maintained?
4. Do you think there will be an upward tendency in prices, or not?
5. Will you kindly give any further suggestions?

A Southern Architect.

1. We think it advisable to defer building for the time being.

2. The reason is that materials are prohibitive in price and almost impossible to get.

3. We think that present prices will be continued for the period of the war.

4. We doubt whether prices will go much higher, because there is an evident intention on the part of the government to control prices in all directions, and this tendency is likely either to stabilize prices by voluntary action on the part of those making them or to result in throwing merchantable commodities under the direct control of the government, where prices will be cut to legitimate points.

5. There is no legitimate reason for many high prices now asked for many construction materials, excepting a general feverish business feeling throughout the country and a nervousness on the part of business men as to the future. We think this nervousness entirely unjustified by the business situation and it should correct itself at least in part in the near future and be entirely relieved at the end of the war.

Industrial Notes

Mr. D. O. Druffel, for many years associated with the Pacific Manufacturing Company in an executive capacity, has severed his connection with that concern, and disposed of his interest to Mr. Pierce. Mr. Druffel will retire from active business and take a well-earned rest.

The Biturine Company has been taken over by the Hill, Hubbel interests and the offices of the combined enterprise are in the Fife building. This company expects shortly to market a steel preservative which will protect the reinforcing material in concrete boat construction

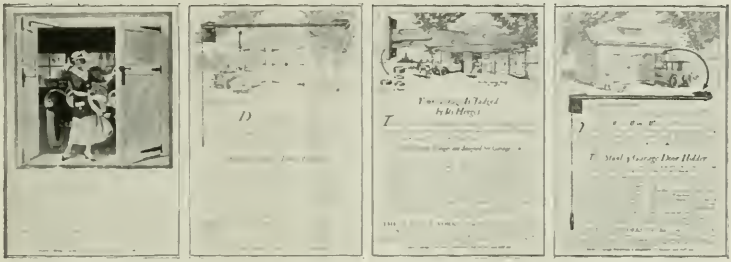
The J. Dougan Company, which recently was awarded the contract to build the new telephone building in Oakland, has reopened offices in San Francisco in the Monadnock building. The company closed its offices in the Hearst building several months ago and transferred its operations to Portland. The local field looks attractive to them again, however, and they have come back prepared to figure building construction throughout the bay region.

The Redwood Sales Manufacturing Company has moved from the Call-Post building to the Grape Growers' building, at Pine and Battery streets, San Francisco.

The J. L. Mott Iron Works, Mr. D. H. Gulick sales agent, have moved from 135 Kearny street, San Francisco, to 553-555 Mission street, where elaborate show rooms and sales offices are being fitted up. It will probably be another month or two, however, before all the fixtures are installed and the display rooms are completely equipped. The new location is close to the other plumbing houses and the entire two-story building will be utilized for storage and display of fixtures.

Unique Terra Cotta Work

The Los Angeles Pressed Brick company is finishing a unique piece of colored terra cotta work for the Ellanay Theatre at El Paso, Texas. It is a decorative panel, 14x25 feet, to be installed in the vestibule over the main entrance. The panel was molded in two sections, later to be cut into subdivisions before burning. It is a portion of two carloads of terra cotta which the company is furnishing on this contract.



These are reduced reproductions of advertisements appearing in Country Life in America, House and Garden, House Beautiful, Motor Life, American Motorist and the Automobile Journal during March, April, May and June.

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Book Reviews

Some Recent Books on City Planning

RURAL PLANNING AND DEVELOPMENT. A Study of Rural Conditions and Problems in Canada. By Thomas Adams, Town Planning Advisor, Commission of Conservation. Published by the Commission, Ottawa, 1917. 281 pages. Free upon request.

Although Mr. Thomas Adams is nominally employed by the Commission of Conservation of Canada, his participation in every American Housing, Town Planning, or national Civic Conference of any importance during the past four years has proved him to be a world citizen of great importance and value to us, for the depth of his understanding and the constructive ideas which he always gives us on these subjects. It is not surprising therefore to find this report of a Canadian Commission as much applicable to the underlying difficulties of our California municipal and rural land problems, as to those of less developed sections north of 49 degrees north latitude.

If America is not yet fully alive to what we must do to prepare for the millions of returning soldiers after the war, as well as for the reconstruction of our facilities for industries and housing during the war, Canada after three years ot it is planning most carefully for these things.

There is a great deal of meat in this report, for those who seek analysis of the fundamental problems of town and rural development. Mr. Adams constantly urges in effect:—study your problem, and study it from every conceivable point of view; know your region thoroughly and prepare many maps displaying it in every aspect; and then think out a treatment suitable for that particular region, and do not imagine that it is necessarily applicable to another. Each region has its own complaints and its own constitution and needs the appropriate remedy; careful and prolonged diagnosis must precede treatment in each case.

Because it is the custom, and we are used to it, few of us have realized the evils resulting from the system prevalent in most of the United States and Canada, of subdividing land into squared off parcels by township, section, and quarter section and our checker-board plan of streets, the only excuse for which seems to be that it is supposedly easy to survey. Mr. Adams finds no practical advantage in the geometrical method and shows very clearly how wasteful and inconvenient this type of planning really is, not only because it produces the deadly monotony of checker-board city plan, but because of the other uneconomic and insanitary conditions which it fosters. His attempts to get the surveyors of Canada to abandon the square for the triangle should be more thoughtfully considered, for the advantages to be gained in the United States by a similar improvement in our land cutting.

He reproduces many plans of arbitrarily squared off areas to show how this has harmed the development of the Dominion and encouraged the speculator in real estate, rather than the greatest productivity of the land, all of which has been made worse by the system of land laws and taxation. (We have the same iniquities in California.)

"The more evenly we can spread the population, the more efficient and profitable we will make the railways. Decentralization of manufacturing industries will not only bring the producer nearer to the consumer but will simplify and cheapen transportation."

"The existing tendency of manufacturing industries to move out to or become established in rural areas indicates the direction in which government stimulus should be provided to secure a closer combination of manufacture and agriculture, to bring the producer nearer to the consumer, and to provide opportunities for education and social intercourse in rural territory."

"In conclusion it is contended that proper control of the development of land cannot be secured without the preparation of a comprehensive development scheme, in which consideration will be given to all matters effecting public convenience, health and amenity; and that one of the most urgent matters in connection with the conservation and development of land and human resources in Canada, is the promotion of planning and development legislation, and its efficient administration."

Filled as it is with parallel examples of methods of development for the city and its supporting back country, this report will be a welcome addition to the small number of available reference books on city planning.

WHERE THE GREAT CITY STANDS. By C. R. Ashbee, London. The Essex House Press. Pp. 165. Illustrated. 21 shillings.

"A Study in the New Civics" is the most appropriate sub-title of this abundantly and adequately illustrated volume from the pen of the well-known English architect, designer and craftsman. It is an "after the war" book written during war times and with a full and pressing realization of the dangers of the present and the possibilities of the future. The very first question he asks is, "How much of the constructive effort of the last fifty years shall we save from the wreck of the war?" and then proceeds to indict that development as falling far short of reasonable achievement. In his answer to the question how we are to check the disintegration of society which he believes was in process before the war, and which he further believes the war is hastening, Mr. Ashbee writes: "What is the real way of checking it? Is it by blind negation, and such resistance as we in England have shown during the last two decades to all new constructive enterprise, to all new ideas? By no means. It is by setting up, within our disintegrating society, new groups among the working people themselves, having a new creative purpose. That purpose must be standard and quality in men and things; in short, the method of the arts. It is only by the method of arts that the disintegration of society can be checked, and the finer reconstruction brought about. A little of this method, and the hope that inspired it, I have tried to set forth in the following pages."

He then proceeds in a series of short stimulating chapters to set up some of the standards which he believes must be achieved if the great city is to stand four square with its opportunities and possibilities. Here are the titles of some of the chapters which give one a fair idea of the scope of the work and the author's argument: How the art influences of our time have come to us; the pre-Raphaelite inspiration; the idea behind the arts and crafts movement; the impressionists; the growing regard for amenities and the preservation of history; what William Morris stood for; the idea behind post-impressionism and futurism; the housing and town planning movement; the garden city idea; the city center zones, lungs and open spaces; dirt, noise, and the menace of mechanism; poverty, disease, drink, privilege, and the glut of wealth; waste in education; waste in industry; co-ordination in the city as against competition; the coming of the expert; the guild idea and the idea of competitive militarism; standardization and standard; should men make "profit" out of the arts; simplification of life and public grandeur; the reaction of town and country; foresight and the utopian habit of mind.

This book is frankly dedicated and intended for the civic idealist and is stimulating as such. It is not without value and helpfulness, however, to the practical civicist for its pertinent and ripe comments upon American and British reports and undertakings, based as they are on personal observation, investigation and study. To those who are searching for new ways of building up a better state, his advice and suggestions and his apt observations will be of undoubted help.—National Municipal Review.

TOWN PLANNING FOR SMALL COMMUNITIES. By Chas. S. Bird, Jr., New York. D. Appleton & Co., 1917. 492 pages, ill. $2.00 net.

Until the appearance of this volume, we have had practically no authoritative compilation of data on city planning, applicable to small towns and cities. Walpole, Mass., is a small city with an estimated population of about 5600. Mr. Bird, who is chairman of its Town Plan Committee, has collected into this volume not only Dr. John Nolen's very valuable City Planning Report on this city, but an unusual number of other reports on Housing, Social Life in the Community, Town Forests, Streets and Roads, Ways and Means, Town Government, Community Organization, etc., each with a complete bibliography and statistics of the experience of other cities

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that are invaluable to all those interested in city planning.

The summary of housing projects in the United States and England, with statistics of costs, payments, government loans, methods of financing, etc., is an important contribution to our authentic information on the subject.

In discussing ways and means he quotes from an English authority a statement that "no less than 1500 German towns and villages have owned, since the middle ages, so much common land that their inhabitants pay no taxes. Five hundred of these villages derive so great a revenue from their lands as to enable them to pay every citizen on New Year's Day a bonus of from $25.00 to $100.00 as his share in the surplus." These profits are mostly derived from municipal forests which are scientifically cut and replanted to produce a definite annual yield.

This volume will be most useful and is an admirable complement to the volume edited by Dr. John Nolen, entitled "City Planning," in the same series.

AMERICAN CITY PROGRESS AND THE LAW. By Professor Howard Lee McBain. Columbia University Press, New York, 1918. 269 pages. $1.50 net.

The legal obstacles to city planning have never been thoroughly understood by the great majority of those engaged in city planning work. When they are known there is a means of getting around them, or removing them. Professor McBain's book, which is a very clear statement, stripped of unnecessary legal verbiage, will be useful to city planners and to all civic workers.

The two chapters particularly on city planning, and the four other chapters on allied topics of city development, such as the smoke nuisance, billboards, public utilities, recreation, and the promotion of commerce and industry, give us an accurate outline of the recent court decisions on these matters throughout

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the country. The book is carefully and completely annotated and will serve as a valuable reference.

A CITY PLAN FOR OMAHA. Report of Geo. B. Ford, E. P. Goodrich and Chas. Mulford Robinson, to the City Planning Commission, Omaha, Neb., 1917. 88 pages, ill. Free upon request.

An interesting City Planning Report which should be of much practical use to Omaha. It is terse and to the point, with many specific recommendations and suggestions on boulevards and drives, belt traffic ways, major streets and diagonal streets, with a preliminary introduction describing the methods of data taken and surveys made.

ESSENTIALS OF DRAFTING. By Mr. Carl L. Svensen, B. S. Published by D. Van Nostrand Co., 25 Park Place. Price $1.50 net.

This is a text and problem book for apprentice, trade and evening technical schools. The problems are in one chapter at the end of the book, so that a selection may be easily made. The subjects are arranged to suit the author's convenience, but they may be taken in a different order if desired. The author has included in the work considerable elementary machine design as belonging in practical treatment of mechanical drafting. The book is profusely illustrated.

Factory Sanitation

The necessity for modern sanitation in the factory does not rest entirely upon the value of sanitation for hygienic reasons, but is made imperative by the fact that money is saved, production cheapened, cost of maintenance lessened, better employees secured, and their efficiency enhanced by the proper number and distribution of sanitary appliances.

When the owners and engineers took up the subject of plumbing equipment for the new factory of the National Carbon Company in San Francisco, they went very carefully and thoroughly into the matter, not only from the standpoint of distribution and number, but were careful to select fixtures of the most advanced type and with the most sanitary features.

The toilet illustrated on page 25 gives an idea of the care taken in selecting the fixtures. It will be noted that no part of the bowl touches the floor, the entire area of which is unobstructed and accessible to mop and hose. This closet is also a space saver, requiring from four to eight inches less space, from wall to front of bowl, than usual type of floor closets.

It will also be noted that the flush valves are of the "Pedal" type and can

be operated with the foot or hand. This is a very desirable feature and has proven to be practical in actual service.

The fixtures were furnished by Haines, Jones & Cadbury Co., San Francisco, and the factory has been pronounced the most up-to-date, from the standpoint of sanitary equipment, on the Pacific Coast.

Vulcanite Roofing Used in War Building Construction

The San Francisco branch of the Patent Vulcanite Roofing Company has recently completed the shipping of roofing to the Government aviation camps at Alessandro, Southern California, and Mills Station near Sacramento. These orders amounted to over 8,000 squares of red slate roofing.

The Patent Vulcanite Roofing Company has for several years endeavored to push the ornamental roofing more than the ordinary plain roofing and there seems to be now a tendency for ornamental roofing to be used much more than in the past. The company's eastern factories, of which there are seven, are turning out ornamental roofing, including asphalt shingles, in very large quantities. Speaking of its products, Mr. S. Berton, manager of the San Francisco office, said:

"Vulcanite asphalt shingles are a household word in the East and our Kansas City factory has recently roofed a government building with our Style "D" red shingles amounting to 3,750 square over old wooden shingles.

"Our San Francisco branch has two machines fully equipped for turning out asphalt shingles and has been successful in covering some very attractive buildings in Los Angeles as well as throughout the San Joaquin Valley.

"The Vulcanite products are guaranteed absolutely both to the dealer and his customers and are backed by the entire Vulcanite organization. We also handle a complete line of roofings and shingles, including plain shingles, self-spacing shingles, roll-shingles, slab-shingles, roll-roofings, ornamental and plain, sheeting, asphalt cement, asphalt paints, built up roofings.

"This company has five roofing plants in the United States and two dry felt mills."

The San Francisco factory is located at 16th and Texas streets. Phone Market 390.

Insurance Company Expands

The M. C. Harrison Company has taken a new lease of the building on the northeast corner of Pine and Leidesdorff streets, San Francisco, and plans are being prepared by Mr. Chas. Sumner for an additional story.

National Housing Officials

Here are the executive officers of the Housing Department of the United States Emergency Fleet Corporation, with headquarters at Philadelphia, Pa.:

Asst. Director of Housing:...J. Rogers Flannery
Director of Production.....Robt. D. Kohn
Asst. Director of Production....Frank Goodwillie
Manager Construction Branch.....W. G. Luce
Deputy Director Production.....E. J. Russell
Head Designer.....F. L. Ackerman
Chief Engineer.....Morris Knowles
Town Planner.....B. A. Haldeman
Genl. Supervisor.....D. M. Hepburn
Property Manager.....Dr. Milo R. Maltbie
Principal Assistant to Director..W. Purves Taylor
Manager of Investigation Branch...W. E. Guerin

Following are the executive officers of the Emergency Fleet Corporation, Concrete Ship Construction Department:

Chief Engineer.....R. J. Wig
Assistant Chief Engineer.....H. J. Brunnier
Assistant Chief Engineer.....L. R. Ferguson
Chemical Engineer.....G. W. Coggeshall

Convention Report

A comprehensive report of the transactions of the annual convention of the American Institute of Architects, which was held at Philadelphia the last week in April, was rendered to the members of the Southern California Chapter at its June meeting by President J. J. Backus, who was the delegate of the Los Angeles Chapter to the convention. Mr. Backus' review of the work of the convention and entertainment features was greatly appreciated by the members.

Win Competition

Messrs. Lescher & Kibbey, architects of Phoenix, were selected as architects in the recent competition for the women's dormitory at the Arizona State University at Tucson. The building will be Mission design, of fireproof construction, and will cost $80,000.

School Houses

Fresno.—The Board of Supervisors has received bids for the purchase of $30,000 bonds of the Firebaugh Joint School District.

Porterville.—The Olive Street Grammar school will be remodeled, classrooms being fitted up in the present auditorium.

Fresno.—Messrs. Swartz & Swartz of Fresno, have prepared plans for a $6000 school building to be erected in the Nickerson School District, six miles southeast of Visalia.

Turlock.—The courts have finally settled the controversy over a site for the new high school building, and construction will now proceed from plans by Messrs. Stone & Wright.

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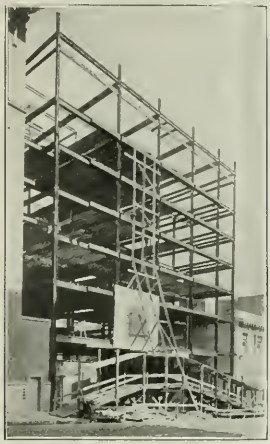

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Plea for the Wooden Shingle

TO eliminate the wooden shingle, even only in certain localities, would be about as wise a step as the elimination of bread and potatoes from our daily diet, is the opinion of Mr. R. S. Whiting, architectural engineer of the National Lumber Manufacturers' Association, and Mr. H. R. Isherwood, trade representative of the association, who have jointly published a treatise on "Why and How Wooden Shingles Should Be Used."

In view of the widespread attempts of promoters of new industries to supplant the time-honored wooden shingle by substitutes of various kinds, Messrs. Whiting and Isherwood undertook an investigation to ascertain the sentiment of various sections of the country regarding wooden shingles. Briefly their findings were:

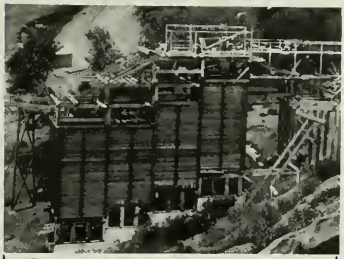
1. That but a dozen or so of the larger cities, where the use of wooden shingles is specially barred, is more than compensated by the fact, as follows:

2. That at least 45 of the largest cities, including New York, Chicago, Philadelphia, Cleveland, San Francisco, Dallas, Detroit and so on down the list even to the national capital, permit the use of wooden shingles within their corporate limits outside of the congested zone.

"This," the treatise says, "is sufficient proof that the advantages of the wood shingle roof in residential districts are still recognized." The paper continues: "It is rather unfortunate for the logic of some of those most strongly opposed to the use of wooden shingles that they house their own families under such a roof."

The investigation revealed further that some cities after enduring the results of an anti-shingle ordinance until their patience became exhausted by the harmful results in the retarding of building operations, either have repealed or are

(Continued on page 131)



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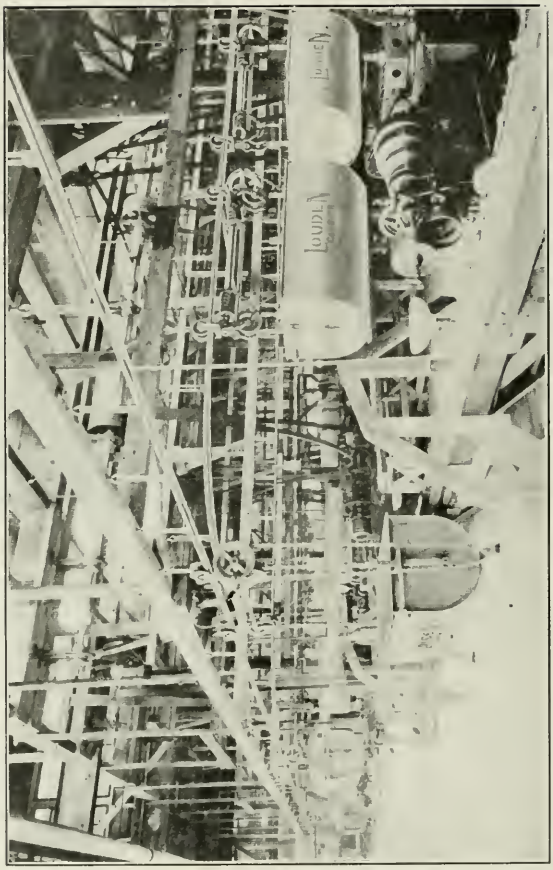
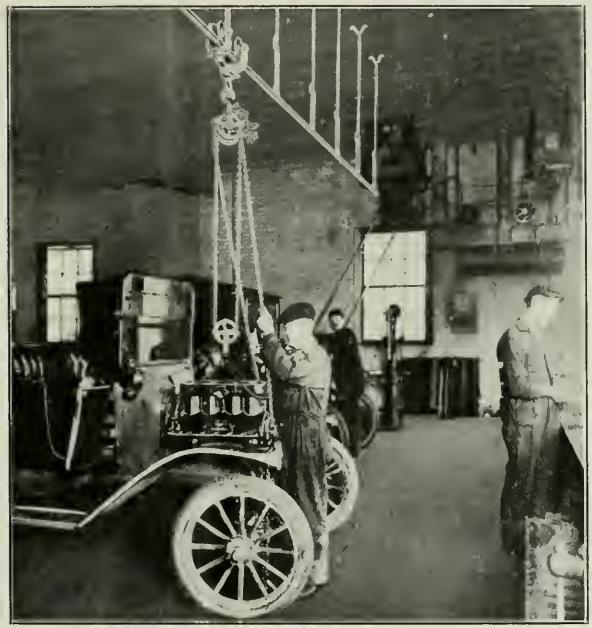


Interior of one of the largest munition factories in the country, showing the Louden overhead carrying system in operation. All filings and borings from each machine are carried to a central storage, thus saving every scrap, an economy which will in a short time pay for entire installation. California Hydraulic and Engineering Supply Co., San Francisco, agents.



Louden Overhead Carrier System in Garage,

California Hydraulic Engineering and Supply Co., San Francisco, agents.

Overhead Carrying System

THE great need of overhead carrying systems for moving weights of three or four tons has been solved by the Louden Machinery Company of Fairfield, Iowa, represented on the Pacific Coast by the California Hydraulic Engineering and Supply Company, 70 Fremont street, San Francisco, of which latter concern Mr. F. M. Neely is president and Mr. C. U. Martin is general manager.

Realizing the need for an overhead carrying system for practically every industrial concern, the Louden Machinery Company has designed a special double headed steel track with brackets and hangers which will sustain weights of up to four tons.

The company also has designed special merchandise carriers which can be used with block and tackle or chain blocks for lifting or carrying weights.

The company's products include also a special line of carriers for carrying articles in bulk. Where special carriers are needed, the Louden hoist can be used in connection with the carrier built to suit the particular requirement of the user.

These systems are being installed in a great many places for different kinds of service, including garages, butcher shops, meat-packing plants, fruit drying and packing plants and one installation has been put in for handling concrete reinforcing bars from the car to the warehouse.

It is said there is no place where it is possible to install a track and where it is necessary to move boxes, bales or other articles from point to point that this system cannot be installed, thereby saving much time and labor.

A display of this equipment may be seen at the salesroom of the California Hydraulic Engineering and Supply Company, 70 Fremont street, San Francisco, and also at the display rooms of the "100% Club" on the ground floor of the Monadnock building, San Francisco.

Plea for the Wooden Shingle

(Concluded from page 129)

planning to repeal such ordinances. Houston, Texas, for instance, the paper says, after having passed through nine months of building stagnation repealed its anti-shingle ordinance. In this city it was found that the effect of the shingle ordinance was to retard just 40 per cent the building of small houses as compared to the corresponding period of the previous year.

In refutation of the claim, by the makers of substitutes, that wooden shingles frequently cause great conflagrations, the investigation shows that of the 47 fires involving losses of more than $500,000 in 1917, throughout the country, only one occurred in a residence section where wooden shingles predominate.

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